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ARTÍCULO DE INVESTIGACIÓN

# PRODUCTIVIDAD EN INSTITUCIONES DE EDUCACIÓN SUPERIOR DENTRO DE LA DIGITALIZACIÓN

Olga Kravchenko*, Olga E. Vinokurova**, Vitaly M. Smolentsev*** y Rafina R. Zakieva****

**Resumen**

Este estudio tiene como objetivo determinar la productividad de los docentes en el contexto de la digitalización de la educación y la implementación de tecnologías digitales en el proceso de trabajo de las instituciones de educación superior. Los autores subrayan varios factores que inciden en la productividad de los docentes: organizativos y económicos, materiales y técnicos, científicos e innovadores, factores sociales. El tamaño de la muestra de este estudio es de 91 profesores, profesores asociados, asistentes, profesores jóvenes y profesores incluidos. Los resultados obtenidos muestran que el proceso de digitalización de la educación brinda a los docentes la oportunidad de incrementar la productividad laboral en más de un 47%, ya que las tecnologías innovadoras ahorran tiempo para la preparación de clases y reducen la intensidad laboral. Pero la presencia de analfabetismo informático entre algunos empleados reduce la productividad laboral en un 10% y la intensidad laboral aumenta en un 30%, por lo que mejorar la alfabetización informática y los cursos de actualización ocupan la mayor parte del tiempo que los docentes podrían dedicar al trabajo. Se concluye que el desarrollo de la digitalización en la educación en general tiene un efecto positivo en la eficiencia del trabajo de los docentes, pero también tiene aspectos negativos, por lo que el autor dio algunas recomendaciones con el fin de mejorar este proceso.

**Palabras clave:** digitalización; trabajo del maestro; intensidad de trabajo, eficiencia, proceso.

**Abstract**

**PRODUCTIVITY IN HIGHER EDUCATION INSTITUTIONS WITHIN DIGITALIZATION**

This study is aimed at determining the teachers' productivity in the context of digitalization of education and the implementation of digital technologies in the process of higher educational institutions work. The author underlines several factors that affect the teachers' productivity: organizational and economic, material and technical factors, scientific and innovative, social factors. The sample size of this study is 91 teachers, associate professors, assistants, young teachers, and professors included. The obtained results show that the process of digitalization of education provides teachers with the opportunity to increase labor productivity by more than 47%, since innovative technologies save time for preparing for classes and reduce labor intensity. But the presence of computer illiteracy among some employees reduces labor productivity by 10%, and labor intensity increases by 30%, therefore, improving computer literacy and refresher courses take up most of the teachers' time that they could spend on work. It

is concluded that the development of digitalization in education in general has a positive effect on the efficiency of teachers' work, but it also has negative aspects, therefore, some recommendations were given by the author in order to improve this process.

**Keywords**: digitalization; teacher's work; labor intensity, efficiency, process

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## 1.- Introduction

Digitalization is a current trend in the global social, industrial and educational systems. Over the past decades, scientists and educators have drawn attention to the importance of improving the quality of education. In modern conditions, new scientific discoveries, technological innovations, an increase in the quality of intellectual capital, mobile communications, the dynamic development of information and computer technologies, and the expansion of business space are becoming the most important factors of economic growth. The widespread introduction of information and communication technologies in the field of education is the most important technological feature of the development of modern space. In the process of informatization, information and technological breakthroughs are closely intertwined into a single process, which tends to accelerate itself. This means the continuous development of information and communication technologies (ICT), which results in a qualitative update of the technological base. The role of information technologies in the development of society is to accelerate the processes of obtaining, disseminating and using new knowledge by society.

In the history of the development of civilization, there have been several information revolutions, when cardinal changes in the field of information processing have led to the transformation of social relations, the acquisition of a new quality by human society. The first revolution was associated with the invention of writing, which led to a giant qualitative and quantitative leap in the development of society. There was an opportunity to transfer knowledge from generation to generation. The second (mid-16th century) was caused by the invention of printing, which radically changed industrial society, culture, and the organization of activities.

The third (late 19th century) is due to the invention of electricity, thanks to which the telegraph, telephone, radio appeared, allowing the prompt transmission and accumulation of information in any volume. The fourth (70s of the twentieth century) is associated with the invention of microprocessor technology and the emergence of a personal computer. Computers, computer networks, data transmission systems are created on microprocessors and integrated circuits.

At the end of the 60s of the 20th century, information processes sharply intensified. The main components of these processes were an increase in the volume of extracted, processed and transmitted information. The graphical presentation of the number of publications, inventions, computer programs and other results of intellectual activity, depending on time, shows an abrupt (exponential) growth at the turn of the 50-70s. This graphic interpretation is called the "information explosion".

The noted circumstances stimulated the development and creation of automated tools for the creation, processing and transmission of information. Scientific research on understanding the role and significance of information on the prospects for the development of society has also intensified. Today, the information society is understood as a society in which information is a key component of economic and social life.

Information society is a society in which most of the workers are engaged in the production, storage, processing and sale of information, especially its highest form - knowledge. Therefore, in many countries an active and purposeful technical policy is being pursued for the development of key technologies of the information society, the creation on their basis of a wide range of applications, systems of services in various spheres of human life, industry and society. This policy, which determines the economic and social situation, the prospects of a country or region, their position in the world and national economy, is called informatization.

Currently, we are witnessing the rapid growth of information systems in various areas of human activity. This is due, on the one hand, to changes in the economy, and on the other hand, to the new possibilities of information technologies Panyushkina, 2013). The most significant, in our opinion, achievements in the field of education is the process of transition to an electronic system - the process of digitalization of education is taking place.

As in most developed countries of the world, digital transformation is taking place in Russia, implemented through various digital tools. This transition not only became a reason to intensify digital transformation, laid down as a strategic goal of a number of policy documents in the field of education, but also makes it possible to check the results of the transformations already carried out. At the same time, the impact of the situation on the quality of education and its long-term social and economic consequences, in any case, have yet to be assessed. However, one of the aspects is possible and necessary to study "hot on the trail" - the impressions of direct participants in the educational process from the forced intensive interaction with digital education. Today, in the world of interactive technologies, the activity of any educational organization using distance technologies is visual, colorful, informative, interactive, saves the teacher and student time, allows the student to work at his own pace, and makes it possible to monitor and evaluate the learning outcomes.

If 10 years ago it was just an idea, then by the current 2020 there have been many changes in the field of education related to digitalization. Educational materials, plans, classes, magazines have moved to online versions, to digital platforms. A student can already study without leaving home, on the Internet. A lot of Internet platforms, electronic educational complexes, Internet sites where learning takes place using distance technologies. Many educational institutions are equipped with modern

technologies: computers, tablets. Each office has an Internet connection to access information content. Old school teachers have to learn a new education system. Young educators are already entering the education system with digital skills.

Digitalization means independent study of the material. The teacher acts as an assistant, a curator, who will have to be contacted only when necessary.

Currently, a person has a huge choice of where to study and how. This is thanks to digitalization. On the Internet, there is a huge selection of distance platforms with different courses in different directions. For children, it is a huge help when you have not mastered the material in the lesson, you can go to the Internet and watch instructional videos with explanations. Digitization involves independent study of the material. The teacher acts as an assistant, a curator, who will have to be contacted only when necessary.

As the digitalization of education has become more widespread, it becomes necessary to consider the impact of the use of an electronic system on the motivation of teachers, and, accordingly, on the quality of teaching of higher education students. Within this framework, the continued use of only information technology by teachers in the teaching process poses a risk to the quality of higher education (Aguenza, Al-Kassem & Som, 2012). It is assumed that the use of digital technology has its pros and cons, which poses a risk to the learning process:

Absolute control. This applies to students, educators and parents. A personal file is started for each person, detailed information about the family is collected. This will lead to total control of society. At a lower level, a child cannot hide anything from adults. Previously, it was possible to hide the diary, correct the assessment, and keep silent about the comment. In the future, this will not be possible, which is bad for children. This will noticeably hit on independence. When a child faces problems, he tries to solve them himself, albeit in the wrong ways.

Lack of creativity. Scientists have proven that color design helps a person remember information better. Even adults are encouraged to create their own notes with minor adjustments. It also fosters creativity. However, information technology excludes the opportunity to prove themselves. Electronic versions are "dry" in nature. The child will quickly get used to a boring story. Children's creativity will suffer noticeably.

Poor socialization. When a student first comes to school, there is only a small chance that he will meet a friend there. The child immediately finds himself in another society, where he does not know anyone. In the institution, he receives not only knowledge, but also makes friends, learns to interact with society. The information system significantly reduces the level of human socialization. This will affect the further development of the personality.

Problems with physical development. Vision and fine motor skills will change first. Long-term use of screens leads to eye fatigue. Over time, there will be: dryness; redness; irritation; deterioration of vision. In the next generations, there is hardly a person with good eyesight. However, technology may become safer for child development in the future. Working with the keyboard and tablet will change the physiology of the fingers. The structure of bones, joints and muscles may change. Risk of negative outcome. These changes will be dramatic. There is no way to say for sure

whether such an innovation will be positive. This system will be applied for the first time, so it will not work to compare with something like that. Decreased mental alertness. This phenomenon can be observed already now. A person does not need to think about something, he has ceased to independently obtain information. It is enough to have access to the Internet to find out the necessary information. This leads to a weakening of thinking abilities. The function of educators. After digitalization, the concept of a teacher will be completely changed. Professionals will be replaced by robots and virtual systems. People will lose their jobs. We believe that uncontrolled informatization of education can worsen the educational process, reduce the efficiency of higher educational institutions. The noted circumstances require a comprehensive consideration of the processes taking place in the information sphere of society and the development of methods of legal state regulation. These problems and risks have been explored in many empirical and theoretical studies, which have provided significant conflicting statements about the impact of the use of information technology in higher education on the level of teacher motivation.

Many theoretical and empirical studies have shown a positive correlation between efficiency and the use of information technology by teachers (Arzumanova, 2009; Panyushkina, 2013; Salanova, Nomass, 2013; Zhang et al, 2014; Costley, 2014; Muttappallymyalil et al, 2016; Ezziane, 2007; Li, 2013 Ghavifekr & Rosdy, 2015). On the other hand, the following theoretical and empirical studies indicated a negative relationship between informatization of education and teacher motivation and the quality of education (Shadrikov & Shemet, 2009); Klyuev, 2008; Trukhanenko, 2020; Kemp et al, 2014); Yunus et al, 2013; Pazilah et al, 2019; Srivastava, 2019; Wasserman & Migdal, 2019).

As far as we know, there is no empirical study that studies the relationship between the digitalization of education and changes in the level of motivation of teachers in higher education (for example, in the Russian Federation). Thus, this study aims to study the impact of the digitalization process in higher education on the level of productivity of higher education teachers in the 2020-2021 academic year.

## 2.- Literature review

Labor productivity is an economic category that expresses the degree of fruitfulness of the expedient activities of people in the production of material and spiritual benefits (Rachek & Miroshnik, 2013); and is defined as "an indicator of the efficiency of the use of labor resources, labor factor. Labor productivity as one of the indicators of the economic efficiency of production, characterizing the degree of effectiveness, the fruitfulness of the use of human labor in the process of production activities and the cost of living labor (Vaysburd, 2015). Thus, labor productivity is a measure (gauge) of labor efficiency. The effectiveness of teachers' work depends on the following factors:

• material and technical factors (provision of educational, methodological, periodical and scientific literature, etc.);

• organizational and economic (the number of lecture hours in the discipline) and quality (the quality of practical and laboratory studies) (Bolotov, 2005; Boguslavskaya, 2012);

• scientific and innovative factors (the number and importance of scientific articles published by teachers and students);

• social factors (the degree of dependence of the material remuneration of students on the quality of their knowledge, the degree of dependence of the material remuneration of teachers on the quality of student training, the level of development of the social security system for students and teachers at the university) (Litvinova & Cherkasov, 2012).

The norms of time allotted for educational work, as well as the distribution of the types of teaching load performed by the teaching staff, depending on the position held, the availability of an academic degree (title), are determined by the Regulations on the procedure for planning and accounting for the total (pedagogical) load performed by the teaching staff. composition. There is another opportunity to assess the effectiveness of the teacher's activity - on the basis of a competence-based approach. Such a system of assessing the teacher's work allows taking into account, in addition to individual facts and achievements that are amenable to external fixation, complex processes of self-regulation, self-assessment, spiritual and moral improvement of the teacher, the growth of his general culture, etc. In the scientific literature, a number of attempts have been made to determine the key and professional and personal competencies of university teachers. So, V.D. Shadrikov proposed his own model of the professional standard of pedagogical activity of a teacher, presenting it as a system of minimum requirements for knowledge, skills, abilities and personal qualities of a teacher, which, in their totality, allow the implementation of pedagogical activity and determine its success (Shadrikov & Kuznetsova, 2010). Thus, in the monograph by T.E. Isaeva provides a list of the competencies of a teacher as an active member of society, being in constant development, consciously engaged in "learning for a long life", ready for constant changes and the acquisition of new knowledge, skills and competencies, which the author calls "competencies of the future" (Isaeva, 2012) ... Believing that the competence of a teacher is a "unique system of professional and personal knowledge, skills and qualities of a person, united by a humane and value attitude towards others, a creative approach to work, a constant focus on personal and professional improvement, used to master pedagogical situations, in the process of which new meanings of activity, phenomena, cultural objects are created, contributing to the achievement of a new quality of public relations "(Isaeva, 2006), we offered the following competencies: high professional competence; pedagogical competence; socio-economic competence; communicative competence; a high level of professional and general culture (Kazar'yanc, (2010; Pashtaev, et al, 2018). Current professional functions include information and computer literacy (Ruliene, 2008; Satharasinghe, 2001; Son, et al, 2011; Kretschmann, 2015) .In the modern sense, information literacy presupposes the ability to identify the type of necessary information, to search for it, including automated, to select and analyze it and

effectively use it in activities. Information and computer literacy of teachers requires the ability to format and place information resources for educational purposes in the form of a web page, pdf file, ppt presentation, ipg, zip, graphics, digital sound and video, hypertext, etc. (Ruliene, 2008; Son, et al, 2011). Internet library of the course, create a glossary, a database of on-line tests, Internet seminars, Internet projects. this) will be put into the educational process, it is necessary to check the availability of all declared educational materials and knowledge tests, the correctness of the tests; analyze the summary characteristics of the course, determining the degree of readiness of the training course, create a CD-version of the Internet course using a special utility, analyze the educational process for the course, evaluate the dynamics, and identify possible problems.

Therefore, the widespread use of information and electronic technologies in their teaching activities provides teachers with the opportunity to increase labor productivity by more than 47% (Pazilah, 2019; Yunus et al, 2013). Many authors write about the diversity of digital educational platforms and the need for personification, where it is important to develop individual educational trajectories, the answer to which will require creativity, the ability to compare, analyze, filter out unnecessary things, communicate, etc. Klyuev, M.A. suggested that the introduction of digital technologies causes a change in the needs of a higher institution in the requirements for teachers, since more than 27% of the teacher's functions can be automated (Klyuev, 2008). This will allow, firstly, to sharply reduce - not less than 1.5 times the teaching load of teachers, which will improve the quality of preparation of classes, will provide the necessary reserve of time for conducting educational, methodological and research work. Secondly, to reduce the number of students in academic groups and lecture streams.

At Tyumen Industrial University, Kazan Federal University, Togliatti State University, the most popular products are Zoom, which provides the organization of audio and video conferencing, group work of up to 100 people, the possibility of polls, chat. Popular services include BigBlueButton (BBB), Webinar.ru, Google Tabs, etc. WhatsApp, Viber, Skype and others are successfully used in training; cloud services Yandex, Mail, Google, email.

Ustinova, O. N., Volkova, L. M., Dasko, M. A., Golubev, A. A., Datsenko, A. A., & Vasiliev, D. A. suggest that such a variety of digital interaction systems , the possibility of choosing the necessary platform leads to an increase in the motivation of students and an improvement in the quality of education, and, accordingly, the productivity of teachers increases by 46% (Ustinova et al, 2021). Students have a great desire to study in digital formats and note its advantages: study takes place in a comfortable environment; you can study anywhere you have access to the Internet (home, work, travel); training makes it possible to find a part-time job; printed textbooks do not always keep pace with the passage of time (digitalization allows you to find materials in a timely manner); mastering Internet technologies, digital formats; saving costs for renting apartments, hostels, transport; individualization of training - the material is viewed as many times as necessary for everyone; less time spent traveling to and from university. (Ustinova et al, 2021).

Despite the many positive aspects of digitalization of the educational process in Russia, which increase the productivity and productivity of teachers, several other studies have shown the negative side of this process in education. More than 70% of teachers noted low labor productivity due to low information literacy, i.e. not possession of basic computer knowledge and skills, professionally oriented computer knowledge and skills (a set of knowledge and skills that are specific to each professional category of users, corresponding to the level of computerization of the professional environment. spend on work affairs, labor productivity decreases by 10%, and labor intensity increases by 30%. It is noted that there are several main risks for the productivity of pedagogical work associated with a decrease in the motivation of students to learn and, as a result, teachers to work: digitalization of education complicates the problem of stimulating the student to work, maintaining discipline, the impossibility of implementing the main forms of intermediate and final certification, even in video mode. contact with a teacher, the student may be surrounded by a whole group of teachers from a remote branch of the university, who suggest correct answers to him, solve problems, etc. Therefore, in relation to the educational process, it is necessary to emphasize that digitalization can be effective only for the transmission of modern knowledge, but not effective for the control of knowledge

## 3.- Research Methods

### 3.1 Sample selection

The target group for this study was the teaching staff of three universities of the Kazan Federal University, a branch of the Tyumen Industrial University in Surgut, and Togliatti State University. Some of the teachers surveyed are scientific and pedagogical workers of the Department of Natural Sciences and Humanities, the Department of Jurisprudence and Law, Pedagogy and Teaching Methods. Simple random sampling is used to select the subjects of the sample who represent the most appropriate for providing data on the factors and dimensions of the study.

### 3.2 Data collection and analysis

In the study, the quantitative method was used to study the impact of the use of digitalization of education on the productivity of employees in the workplace at the Kazan Federal University, the branch of TIU in the city of Surgut and Togliatti State University. The questionnaire for this study was borrowed and adapted from existing research (Khlebnikova & Okonnikova, 2020; Bulanova, 2012). In this study, the questionnaire was used as a suitable data collection tool to answer the following research question: How does the digitalization of education affect teacher productivity?

The first part of the questionnaire included demographic information and questions related to the use of information and electronic technologies in teaching and how this use affects their productivity. The questionnaire contained 8 demographic questions, 4 closed and open questions.

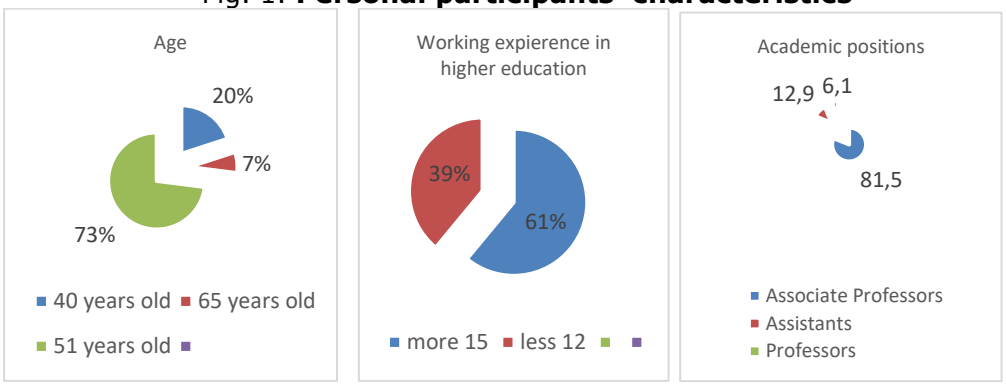
The data was received within two months. The questionnaire was developed using Google Forms technology and corporate e-commerce to make it easier and faster to reach as many employees as possible. A link to the questionnaire is sent to employees via corporate email in collaboration with other colleagues. As a result, 91 questionnaires suitable for analysis were received. Descriptive statistical analysis using analysis of variance, frequencies and percentages was used to describe demographic information and answer a research question.

## 4.- Findings and interpretations

### *4.1 Sample characteristics*

Most of the teachers are women (89%). 61% of teachers have more than 15 years of experience, 49% have less than 12 years of experience (51%). Most of the teachers of higher education who participated in the survey had an average age of 51 years (73%), 20% were teachers at the age of 40, and another 7 teachers were over 65 (7%). Fig.1 shows personal participants' characteristics in this survey.

Fig. 1. **Personal participants' characteristics**




### *4.2 The regularly usage of electronic resources by higher education lecturers*

Questions regarding the use of electronic resources by university staff have shown that they regularly use educational online networks, library resources in the preparation for classes and in the process of teaching practice: Electronic catalog / Electronic library, EKBSON - information system for access to electronic catalogs of libraries in the field of education and science, Electronic library system IPR BOOKS, Electronic library system "Student's Consultant", YouTube, Electronic library system "Lan", Electronic library system "Book.ru", Electronic library URAYT, Scientific electronic library ELIBRARY.RU, National Electronic Library (NEB), Federal portal "Social, humanitarian and political education", Russian portal of open education, English at the Open College, Electronic teaching aids - simulators as shown in the following Fig. 2:

**Fig. 2. How often do the lecturers use electronic resources?**

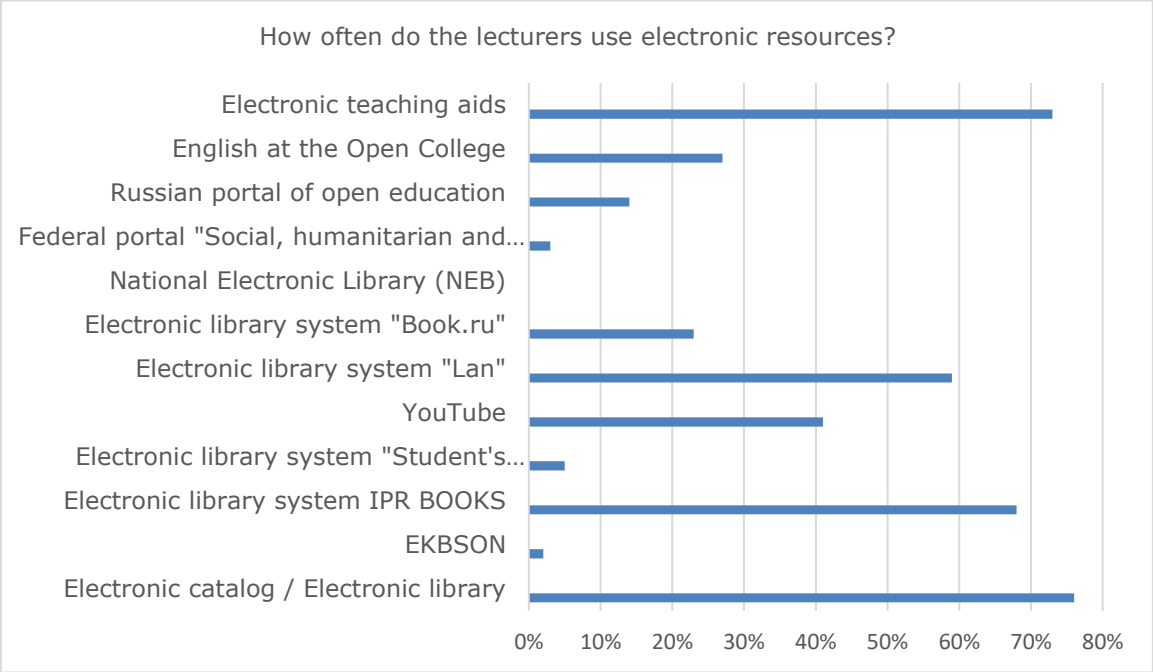
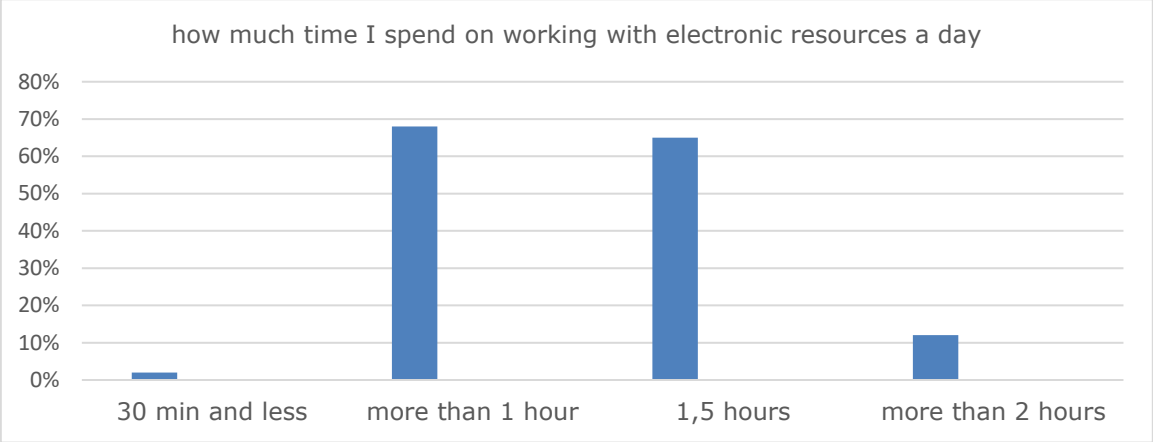



Fig. 2 shows that more than 70% of respondents regularly use Electronic teaching aids - simulators, Electronic library, more than 40% - YouTube, 59% - Electronic library system "Lan", 3% - EKBSON.

4.3 The time spent on electronic resources usage by employees in higher education

In order to identify the laboriousness of working with electronic resources and due to the presence of problems with computer literacy for teachers, we found out how much time an employee spends on working with electronic resources in preparation for classes. Of course, the time spent on training and on improving the skills of working with electronic resources reduces the productivity of teachers. The respondents' answers are shown in Fig. 3:

Fig. 3. The time spent on electronic resources usage by employees in higher education




*4.4 The purposes of using the electronic resources by university employees*

Purposes of using electronic resources by university teachers asked the question: "For what purpose do you use electronic resources in teaching practice?" To ensure: the availability of theoretical educational material, the interactivity of display forms of visibility, quick updating of information material, operational control of knowledge and skills. The respondents' answers are showing in Fig. 4:

**Fig. 4. The purposes of using electronic educational resources**

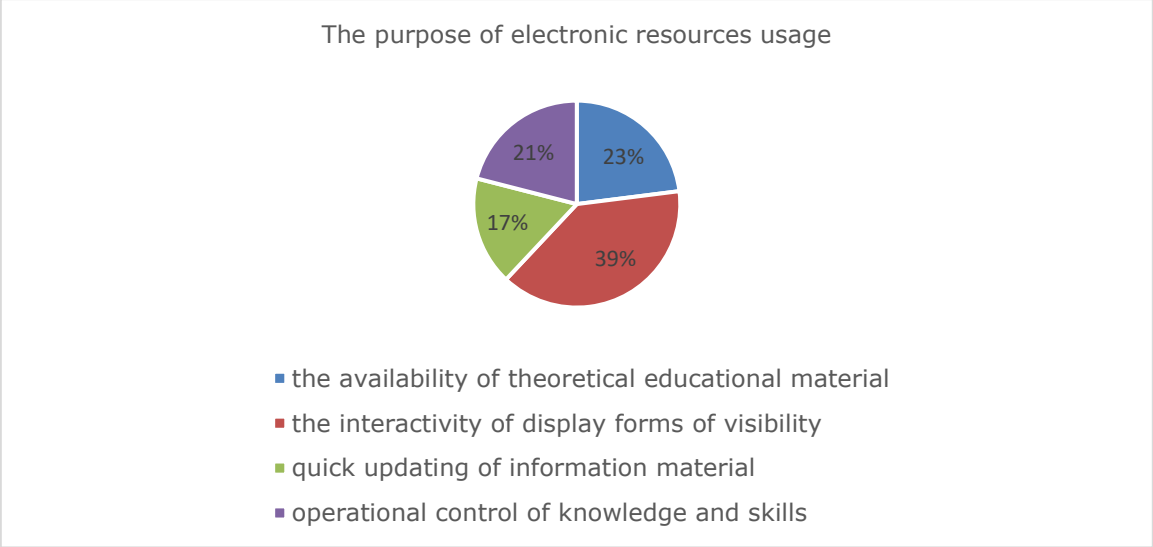


Fig. 4 shows that 39% of respondents use electronic resources with the aim of the interactivity of display forms of visibility, that is, the ability to interact with the learning system, which allows expanding the range of topics studied, which contributes to increasing motivation and cognitive interest in the studied discipline, 23% use resources to ensure the availability of theoretical educational material, which significantly saves the teacher's time and increases labor productivity, while reducing labor intensity, 21% - for operational control of knowledge and skills, which also reduces the time of employees to check tests and exercises of students and only 17% of respondents noted the possibility of quick updating of information material.

*4.5 The usage of electronic resources and employee productivity*

We invited teachers to evaluate the main goals and objectives of using electronic resources, to evaluate labor productivity, as presented by Tables 1.

**Table 1.The usage of electronic resources and employee productivity**

| | Purpose | Likert Scale | | | | | |
|---|---|---|---|---|---|---|---|
| | Usage of electronic resources: | Strongly agree | Agree | Neutral | Disagree | Strongly disagree | Mean |
| 1 | Allows you to develop an individual strategy for working with information | 78 | 69 | 18 | 5 | 1 | 34.5 |
| 2 | Allows you to develop a self-test system, taking into account the individual characteristics of the student | 24 | 45 | 6 | 1 | 2 | 15.6 |
| 3 | Allows you to visualize educational material, increase students' interest in learning | 79 | 65 | 12 | 5 | 1 | 32.4 |
| 4 | Allows you to edit and manage the independent work of students | 76 | 83 | 5 | 1 | 3 | 33.6 |
| 5 | Allows you to control the quality of training | 56 | 32 | 7 | 45 | 1 | 28.2 |

Percentage performance ratings of instructors and are measured using a 5-point Likert scale. An indicator such as "strongly agree" indicates a high level of agreement, "agree" - a moderately high level of agreement with the statement, "neutral" - an

average level. Indicators "disagree" and "strongly disagree" indicate a low level of agreement. More than 56 teachers claim that digitalization of education allows them to develop an individual strategy for working with information. On average, 47.5 teachers pointed to the positive dynamics of this process and noted that this allows them to develop a self-test system, taking into account the individual characteristics of the student.

Regarding the statement that "the use of electronic resources allows to visualize educational material, increase students' interest in learning", the majority of respondents 65-79 indicated a positive attitude towards their use to increase work productivity. 76-83 teachers confirmed the efficiency of resources and that it allows them to edit and manage the independent work of students, which significantly increases labor productivity, reduces the time spent on checking assignments.
Overall, these five statements indicate a positive attitude towards the digitalization of education and the use of electronic resources to increase teacher productivity.

Regarding the labor productivity of higher education teachers, more than 67% of teachers note a positive attitude towards the use of electronic resources and the digitalization of education in Russia and argue that this has a positive effect on labor productivity. This result is consistent with previous theoretical and empirical studies such as (Arzumanova, 2009; Panyushkina, 2013; Muttappallymyalil, et al, 2016; Ghavifekr & Rosdy, 2015; Trukhanenko, 2020; Srivastava, 2019; Ustinova et al, 2021; Kretschmann, 2015).

## 5. Conclusion and recommendation

The aim of this study was to study the impact of the digitalization process in higher education on the level of productivity of higher education teachers in the 2020-2021 academic year. The results of our study are fully consistent with previous theoretical and empirical studies that have shown the positive impact of digitalization of education on the productivity of higher education teachers.

The results of this study confirm that teachers use electronic resources in their pedagogical practice in order to ensure the availability of theoretical educational material, the interactivity of display forms of visualization, rapid updating of information material, operational control of students' knowledge and skills, which reduces the time spent preparing for classes, and reduces labor intensity. teachers. In the course of the study, the negative aspects of the digitalization of education were highlighted, therefore, it is recommended to individualize and differentiate the work of teachers by gradually achieving goals with different difficulties in order to achieve high labor productivity.

The basis for the effective use of information resources and work with them is the integration of technical, software, mathematical, informational, methodological and organizational support of teachers, namely: training teachers in mastering new information technologies, using a text preparation system, spreadsheets, databases or integration developed user packages of processes and the use of information databases, strengthening the motivation for learning through the use of visual means, the

development of a certain type of thinking (visual-figurative, theoretical). All these measures will help them to perform their work duties faster and easier, which can increase their productivity in the workplace.

Despite all the value of research, many important issues remain poorly developed, so a holistic approach to understanding the process of informatization of education is in the stage of formation, so this phenomenon can be studied by future researchers.

**Referencias bibliográficas**


- Arzumanova, N.V. (2009). "The use of modern information technologies in the educational process". **Bulletin** of the Russian State Pedagogical University. AI Herzen, (113).
- Panyushkina, O.A. (2013). Some features of teaching a foreign language using information technology in modern conditions. Teaching and education: methods and practice, (7).
- Nomass, B. B. (2013). "The impact of using technology in teaching English as a second language". **English language and literature studies**, 3 (1), 111.
- Zhang, J. X., Liu, L., de Pablos, P. O., & She, J. (2014). "The auxiliary role of information technology in teaching: Enhancing programming course using Alice". **The International journal of engineering education**, 30 (3), 560-565.
- Costley, K. C. (2014). The Positive Effects of Technology on Teaching and Student Learning. Online submission.
- Muttappallymyalil, J., Mendis, S., John, L. J., Shanthakumari, N., Sreedharan, J., & Shaikh, R. B. (2016). "Evolution of technology in teaching: blackboard and beyond in medical education". **Nepal journal of epidemiology**, 6 (3), 588.
- Ezziane, Z. (2007). "Information technology literacy: Implications on teaching and learning". **Educational Technology & Society**, 10 (3), 175-191.
- Li, N. (2013). "Seeking best practices and meeting the needs of the English language learners: Using second language theories and integrating technology in teaching". **Journal of International Education Research** (JIER), 9 (3), 217-222.
- Ghavifekr, S., & Rosdy, W. A. W. (2015). "Teaching and learning with technology: Effectiveness of ICT integration in schools". **International Journal of Research in Education and Science**, 1 (2), 175-191.
- Shadrikov, V.D., & Shemet, I.S. (2009). **Information technology in education: pros and cons**. Higher education in Russia, (11).
- Klyuev, M.A. (2008). PROBLEMS OF "INFORMATIZATION" OF THE MODERN SCHOOL. In **Ways to Improve the Modern Education System** (pp. 109-111).

- Trukhanenko, M.K. (2020). Pros and cons of distance learning (from the practice of teaching the russian language). In IX All-Russian Science Festival (pp. 13-16).
- Kemp, A. T., Preston, J., Page, C. S., Harper, R., Dillard, B., Flynn, J., & Yamaguchi, M. (2014). "Technology and teaching: A conversation among faculty regarding the pros and cons of technology". **Qualitative Report**, 19, 6.
- Yunus, M. M., Nordin, N., Salehi, H., Sun, C. H., & Embi, M. A. (2013). "Pros and Cons of Using IICT in Teaching ESL Reading and Writing". **International education studies**, 6 (7), 119-130.
- Pazilah, F. N. P., Hashim, H., & Yunus, M. M. (2019). "Using Technology in ESL Classroom: Highlights and Challenges". **Creative Education**, 10 (12), 3205.
- Srivastava, P. (2019). "Advantages & disadvantages of e-education & e-learning". **Journal of Retail Marketing & Distribution Management**, 2 (3), 22-27.
- Wasserman, E., & Migdal, R. (2019). "Professional Development: Teachers' Attitudes in Online and Traditional Training Courses". **Online Learning**, 23 (1), 132-143.
- Rachek, S.V., & Miroshnik, A.V. (2013). "Labor productivity as the main indicator of labor efficiency". **Modern problems of science and education**, (6), 503-503.
- Weisburd, V.A. (2015). "Organization of remuneration is an important element of personnel policy and strategy". **Bulletin of Samara State Economic University**, (6), 95-100.
- Bolotov, V.A. (2005). On the construction of an all-Russian system for assessing the quality of education. Educational issues, (1).
- Boguslavskaya, T.N. (2012). Formation of approaches to assessing the quality of preschool education. Problems of modern education, (4).
- Litvinova, O. I., & Cherkasov, V. E. (2012). Efficiency of teaching staff as a factor in the growth of the competitiveness of the university. Creative Economy, (8).
- Pashtaev, B.D., Kulibekov, N.A., & Kelbikhanov, R.K. (2017). Requirements for a teacher in the context of the leading trends in the development of the domestic higher education system. The world of science, culture, education, (2 (63)).
- Ustinova, O. N., Volkova, L. M., Dasko, M. A., Golubev, A. A., Datsenko, A. A., & Vasiliev, D. A. (2021). Digitalization of education in modern conditions. Scientific notes of the University. PF Lesgaft, (3), 433-436.
- Shadrikov, V.D., & Kuznetsova, I.V. (2010). Methodology for assessing the level of qualifications of teaching staff. VD Shadrikov, IV Kuznetsova.
- Isaeva, T.E. (2013) **Competence of subjects of university education**. Problems of the formation and assessment of competencies in the educational

information space: Monograph / T.E. Isaeva // Palmarium Academic Publishing, Deutschland. [Text]. - 247 p. 7