Attitude of Ukrainian Educators toward the Use of Digital Tools for Teaching and Professional Development: Survey Results

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Abstract. The article deals with the results of the survey of the attitude of Ukrainian educators toward the use of the digital tools for teaching and professional development conducted by the Comparative Studies Department for Information and Education Innovations of the Institute of Information technologies and Learning Tools of the NAES of Ukraine in 2019. 178 respondents – teachers, school administrators, methodologists and in-service teacher training professors answered on the questionnaire from all-over Ukraine. The content of the study covered the following topics: Internet access on the workplace; professional activities and the use of ICT; using ICT tools in the classroom work and professional development; social networks; cloud services; electronic systems of the educational process management and organization; self-assessment of the level of the digital/ information and communication competence; suggestions and attitudes toward the use of ICT for the professional development and practical work. The answers of the respondents allowed providing proposals on the use of digital tools by teachers in their professional activity. The purpose of the article was to present the survey results and provide suggestions on the professional development of teachers and the assessment of their digital competence.

Keywords: Teachers; Educators; Professional Development; Training; Attitude; Survey; In-Service System; ICT Tools.

1   Introduction

Problem statements. Today, in a period of rapid technological development, its impact on the economy, politics, education and daily life, the ability of a person to use digital media, communicate and navigate the Internet, social media, know and use their potential is important. Teachers are the main actors in the education sphere related to the development of the new generation as individuals able to build a successful life trajectory. One of the main factors in the process of education is the use of the digital technologies, in particular the use of the digital tools by the teachers for transferring knowledge to their students and developing their competencies. According to the New Ukrainian School Concept the modern teacher should be motivated, able to build

partnership and works in a team, provides training and support for the students, is able to learn all over the life. Moreover the teacher of the New Ukrainian School should be able to create the collaborative environment with other colleagues, students and community, and has a proficient level of the digital competence [1]. All these features of the teachers are in the scope of the Ukrainian scholars, policy makers and stake-holders. The attitude of teachers to the new technologies and their use in the teaching process reveals the level of teachers' digital competence.

The study conducted by the Department of the Comparative Studies for Educational Innovations of the Institute of Information Technologies and Learning Tools of the NAES of Ukraine in 2019 was aimed at the investigation of the teachers' attitude towards the use of the digital tools, in particular, digital teaching and learning platforms, social media, and digital devices for different purposes in the process of teaching and professional development. It allowed indentifying gaps in the sphere of in-service teacher training in terms of their professional development regarding ICT. The results of the study allowed formulating recommendations for the institutions conducting training for teachers, school heads on how they can use ICT in teaching subjects, organizing extracurricular activities, and for their personal professional development.

2 Literature Review

The foundations of the ICT use by teachers are grounded in the works of domestic scientists and practitioners V.Y.Bykov, V.V.Oliinyk, O.Yu. Burov, V.I. Lugovy, O.M.Spirin and others. The scientists stress mainly on the general approaches to the ICT use by professionals, their ICT-competence, pedagogical conditions and digital environment that should be created in the pedagogical and in-service teacher training institutions for teachers' development regarding ICT [2]. The mentioned authors have made a significant contribution to the development of scientific and methodological support for the training and advanced training of computer science teachers and for its study in other subjects, in particular by distance form; creation of new training systems and cloud-oriented educational environments, electronic educational resources, electronic scientific professional publications, textbooks and manuals for different levels of education.

The approaches to the use of the cloud based and e-based learning tools are revealed in the works of M.P.Shyshkina, S.G.Lytvynova, N.V.Soroko, O.V.Ovcharuk, O.O.Gritsenchuk, I.D.Malicka, I.V.Ivaniuk and others [3; 4; 5; 6]. These researchers investigate forms and methods used by teachers in the process of the development of the digital learning and teaching environment in educational institutions from the comparative perspective.

The purpose of the article is to reveal the teachers' attitude towards the use of digital tools for the teaching and professional development through the conducted in 2019 survey, and to formulate the proposals for the system of in-service teacher training concerning overcoming obstacles and gaps in teachers' professional development.

3 Research Methods

A systematic approach to information retrieval, phenomenon study, the data gathering about the attitude of teachers towards the ICT tools use were applied. Particular importance was given to the analysis, synthesis of information based on common scientific methods of analysis and synthesis. In addition, computational methods of information processing were applied during the data processing survey. Questionnaire was based on European documents, including the Digital Competence Framework for Educators (2017) [7].

4 Research Results

Recent trends in the field of digital technologies are related to such concepts of the modern world as, digital citizenship, digital consumers, digital governance, e-commerce, cyber security, Internet of things, Internet of toys, etc. In the context of these challenges, teachers should prepare young people to be confident in their digital competence and direct them towards their own development. The need to make changes in teaching method and approached is revealed in the newly adopted Law on Education (2017) and New Ukrainian School Concept (2016) [1]. The Law on Education states that everyone has the right to access public educational, scientific and information resources, including the Internet, electronic textbooks and other multimedia educational resources in the manner prescribed by law [8].

The first problem noted in the Concept of New Ukrainian School is the that the most successful in the labor market in the near future will be professionals who are able to learn all over the life, think critically, set goals and achieve them, work in a team, communicate in a multicultural environment and have other modern skills. But the Ukrainian school is not preparing for this.

The second problem is that like 10, 20, 50 years ago, the average Ukrainian student acquires obsolete knowledge at school. In recent years, this volume has increased tremendously, as has the overall global information flow increased in the world. Students are only able to reproduce fragments of unsystematic knowledge, but are often unable to use them to solve life's problems.

Teachers use mostly outdated didactic tools. The digital gap between teacher and student is widening. Many educators do not yet know how to research problems using modern digital tools, work with large data basis, draw and present conclusions, collaborate online in educational, social and scientific projects. All these above mentioned issues were proved by the survey conducted. Let's take a closer look at this study.

Thus, the survey was conducted in 2019 in the framework of the study "Development of information and communication competence of teachers in a cloud-oriented learning environment" (registration # 0117U000198). It was gathered 178 respondents, all responses were anonymous. The survey was constructed on the base of the Google Forms [9]. It consists of nine parts and 18 questions. The main parts are:

1. General information about person (work experience, age, status of institution, gender etc.);
2. Internet access on the workplace;
3. Professional activities and the use of ICT;
4. Using ICT tools in the classroom work and professional development;
5. Social networks;
6. Cloud services;
7. Electronic systems of the educational process management and organization;
8. Self assessment of the level of the digital/ information and communication competence;
9. Suggestions and attitudes toward the use of ICT for the professional development and practical work.

The first section of the survey compiled respondents' personal data. The most part of the respondents were from 26 up to 40 years old (48,3%) and from 41 up to 55 years old (34,3%). Less respondents were 55 and more years old (14%) and less 25 (3,4%), (Fig.1).
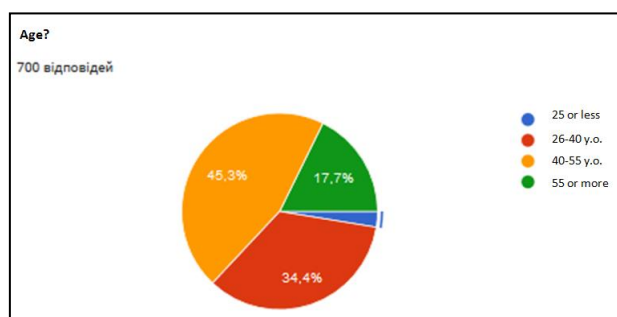

Fig.1. View of the diagram about the diversity of the age of the respondents.

The next question in the first section of the survey concerned the type of respondents' professional activity. The answers were distributed as follows: school administrators (school heads and their deputies) – 11,2%; professors in the in-service teacher training institutes – 16,3%; teachers – 71,9%; scientists in the sphere of pedagogic – 3,9%; methodologists – 4,5% and others.

The following questions were answered on the professional experience record: up to 5 years – 7,3%; up to 10 years – 20,2%; up to 20 years – 32,6%; 20 years and more -39,9 %.

The gender distribution was 75,35% – female; 24,7% - male respondents.

The second section concerned the Internet access on the workplace. 88,8% respondents have sufficient access to the Internet and 10,7% - insufficient, 0,6% does not have any.

The next question in this section was on how many time the respondents spend in the Internet and for which purpose (for professional and personal purposes). The diagram below shows the distribution of the time in the Internet (Fig.2).
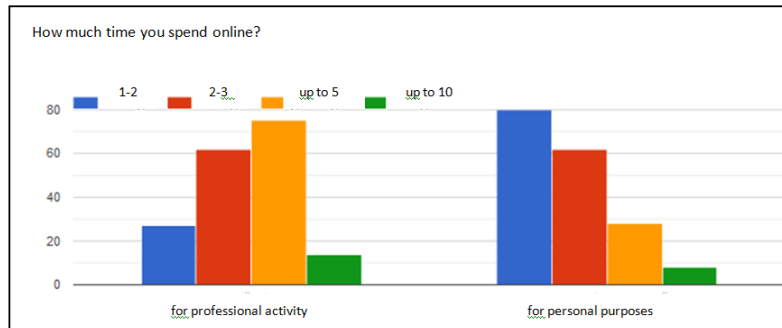
Fig.2. The diagram about the distribution of the time of the respondents spent in the Internet for the professional and personal purposes daily (the vertical scale shows percentages, the columns are distributed by colors: blue – 1-2 hours; red – 2-3 hours; yellow – up to 5 hours; green – 10 and more hours).

The left part of the diagram on the Fig 2 is about professional activity, and the right part is on the personal purposes. As we can see on the diagram, up to 80% of educators spend up to 5 hours daily for the professional purposes. The next question on this section was: What search engines (browsers) do you use to get the necessary online educational resources? 99,4% use Google. Other 0,6% use Yahoo, Ukrnet, Bing and others.

One of the important question of the survey was about how do the respondents check the credibility of online learning resources and digital tools. The responses were the following:

- I use only official and well-known websites in professional environment -71,3%;
- I pay attention to the authors of the resources and the presence of references – 61,8%;
- I pay attention to the content of the source, the structure, the presence of hyper-links and navigation – 50,6%;
- I check through the top ranked resource on Google, and also pay attention to the URL, for example: gov; edu; com; org. – 43,8%;
- I avoid spam and mailing – 64%;
- I don't check because I don't know how – 1,7%.

In this case respondents could highlight (mark) one or more proposed options.

The next sections of the survey concerned the details of the use of digital learning tools, social networks and cloud computing in the professional activities.

The third section is devoted to the use of the ICT in the professional activity of educators. The question was: for what purposes do you need information and communication technologies and digital tools in your professional activity? The answers distributed as follows:

- searching for information and educational resources – 93,3%;
- creation and use of audio and video material in lessons / professional activity – 71,9%;
- creating/using didactic materials and learning, to create learning games – 66,9%;
- creating and maintaining a personal Web site, blog - 46,1%;
- implementation of distance learning – 48,9%;
- virtual lab work – 15,2%;

- lesson planning and design – 53,4%;
- creating online questionnaires and tests - 53,4%;
- self education and personal development, scientific research and other – 0,6%.

Section four contains the question about what kind of ICT tools pedagogues use in their professional activities. The answers were the following:
- personal computer – 89,3%;
- notebook -75,3%;
- Smart Board – 18%;
- Smart Phone – 69,1%;
- Tablet – 28,1%;
- Multimedia projector, TV – 0,6%.

The fifth section is about what social networks do the teachers and other educators use. The diagram on the Fig.3 show that the majority of respondents use Facebook (91,6%), Instagram (38,8%), LinkedIn (15,7%).
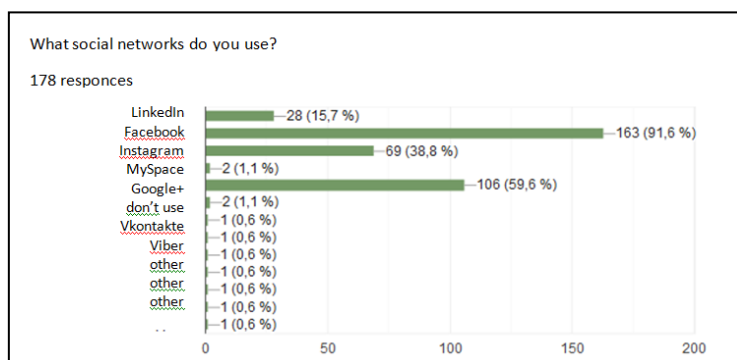

Fig.3. The diagram shows the diversity of the social networks used by respondents.

Section 6 is about the use of the cloud computing tools by educators for the professional activities. This is show in the diagram (Fig.4).
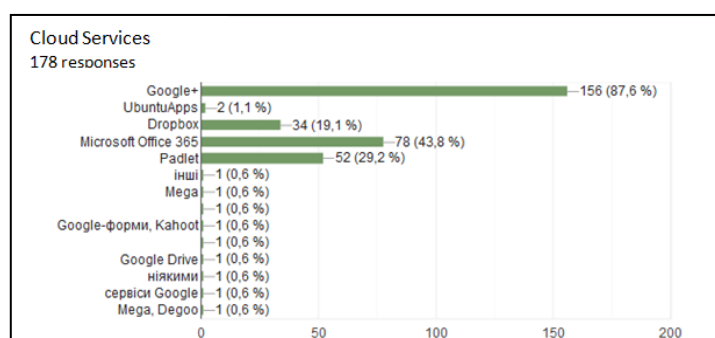

Fig.4. The diagram on the cloud computing tools used by teachers and school heads for teaching subjects and organization of the education process.

Most of the respondents choose Google+ (87,6%) as a most convenient for the professional purposes. It has to be noted that this service is not available now, but in the past years teachers has been frequently used Google+ and reflected this in the answers. They also noted Microsoft Office 365 (43,8%), Padlet (29,2%), and Drop Box (19,1%) as a most used nowadays.

The section 7 shows the picture on what ICT software do educators use for the management and administration of the educational process as well as for the implementation of teaching process in their institutions. The most popular is the Moodle tools (30,3%) and Shchodennyk platform (48,3%). Among other tools which are less used (approximately 0,6% each) are: Google Classroom, Netop School, Classrom, Atutor, SMS Global, OpenEdx, Joomla, Vitrual'na Uchytels'ka, ISUO KURS, Google services, Open EDX, NetSuport, DayPaD. There is also 0,6% respondents who do not use any of the instruments.

The section 8 is about the self assessment of the information and communication competence. The fig.5 shows the diagram on the self assessment of the educators.
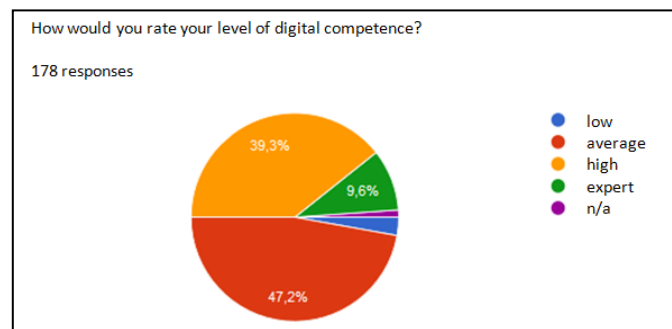

Fig.4. The self assessment on the digital competence shown by respondents-educators.

This part of the study was aimed at the revealing of the feeling of the respondents about their skills and competencies in using ICT. It was proposed express their vision regarding their level of the digital competence through 5-grid scale (Fig.4). The self assessment of the information and communication/digital competence was distributed in such positions:
- 47,2% (red) - intermediate level;
- 39,3% (yellow) - high level;
-9,6% (green) - expert level;
- 2,8 (blue) – low level;
- 1,1% (violet) – do not know.

The self-assessment of the professional activity of the pedagogues is considered as a basis of a teacher's professional competence is his/her practical readiness for self-organization, which consists of the ability to plan his/her activity, to properly allocate his/her time and to find the best ways of its organization, the ability of self-control, self-analysis and self-assessment of its results (Mammon O.V.) [10].

The section 9 is about the attitude of the respondents toward ICT using in the teaching process and professional development. Their attitude was assessed on the 10-grig scale (from 1- low level, up to 10 – high level positive attitude). 57,5% showed the high attitude (10); 16,1% support 9th grid of the attitude; other respondents distributed their attitude between 8th and 5th scale.

In the final section of the survey it was asked the respondents to express their suggestions for raising awareness of the use of ICT in their professional activity. The suggestions were the followings:

- get acquainted with new technologies on the permanent basis - 78,1% (139 respondents);

- try to choose a special course on ICT in the post-graduate institution – 59% (105 respondents);

- find time to the experience exchange with colleagues – 56,2% (100 respondents);

- combine my institution's efforts to create a digital environment – 32,6% (58 respondents);

- I have a personal professional interest in advanced training – 50,6% (90 respondents);

- find time for raising awareness in the sphere of ICT and digital teaching – 43,7% (76 respondents).

5   Conclusions and Recommendations

The conducted study allowed to reveal not only the self-assessment of the educators' digital competence, but also to define how the ICT are used in their professional activities, which of these ICT are more popular and less popular among teachers. Also we also learned about respondents' Internet access and the popularity of the use of social networks for the professional purposes. It was extremely important to reveal the respondents' digital competency self-assessment.

Therefore, based on the above mentioned in the article, we can draw the following conclusion: from the teacher's ability to self-analysis and self-assessment of activity depends on the growth of his pedagogical skills and competencies, their attitude to use new technologies and ability to learn all over the life.

The *scientific novelty* of the research is in the identifying the gaps in the use of ICT in teachers' professional activities and for the professional development: lack of information and knowledge on the existing tools and instruments, lack of the digital skills and competence, lack of the information about didactical approaches to the ICT use. This is crucial for teachers now because of current situation with remote learning in time of COVID-19.

The *essence of the research method* is in the data gathering about the attitude of teachers towards the ICT tools use and their level of awareness, the revealing of their public opinion in this sphere.

The *practical relevance* of the study is to provide recommendations for the system of in-service teacher training on how to use digital tools for teaching and professional development:

In particular, it is suggested to use: web-based resources for teaching the educational disciplines, including distance courses; systematic collection of information and

using of the educational tools necessary for mastering of academic disciplines (programs) accessible through the Internet (ex. local area network); a web browser and other software available to the user. The important is the existence of the web-based distance learning environment in the educational institutions and in the in-service teacher training institutes (a systematically organized set of web-based learning disciplines (programs) as well as web-based resource management software equipped with the distance learning tools, and distance learning management. It is extremely important to raise the awareness of school administrators about the organization and management of the distance learning.

During the practical classes, it is suggested for teachers to use free cloud storages (repositories to access working materials and official documents of the school in shared folders, ex.,School in the Cloud, Shchodennyk and other). The use of Microsoft Office 365 and Drop Box is also preferable.

Educators should also pay attention to international digital education platforms that they can apply to their own practical work. Among them: plus.etwinning.net (https://www.etwinning.net/en/pub/etwinning-plus.htm), a platform for educators that unites Ukrainian teachers today; schoolsonline.britishcouncil.org (https://www.britishcouncil.org/school-resources), a British Council website for teachers containing teaching materials and resources for teachers; EPals.com (https://busyteacher.org/15965-e-pals-com-busy-teacher-detailed-review.html), EPals Global Community is a place where learners connect; knowmyworld.org (https://knowmyworld.org) offers webinars for teachers to share experiences; https://www.penpalschools.com; Echo; www.leraar24.nl; http://www.surfspace.nl, the platforms for exchanging practical experiences among educators in Europe.

Massive open online courses (MOOCs) are also offered to teachers. Those teachers who are able to participate in the English speaking environment can attend a number of teachers' MOOC free online courses on science, languages and other subjects.

To assess the level of the teacher's digital competence, it is suggested to use online self-assessment tools, including: online barometer of collaboration skills using cloud services, MENTEP TET-SAT tool (http://mentep.eun.org). It is important to take into account the Digital Competence Framework for Educators (DigCompEdu) and the Digital Competence Framework for Citizens (DigComp), which contain specific descriptors of 8 skill levels and descriptions of digital competence components.

The following methods of assessing digital competence are proposed: ongoing assessment; team working with the educational managers and methodologists; self-assessment; team working with colleagues for evaluation of achievements; development of the individual work plans; providing observations of the lessons by the skilled colleagues; conducting regular problem analysis, surveys; creating portfolio; conducting activity research. The assessment of the digital skills of teachers can be done in the form of exams, testing, observation of the teaching process etc.

The results of the survey conducted in 2019 can be useful for the domestic curricula developers and those practitioners who plan and use digital tools in the education process. *The data shown in the results of the survey prove that the attitude of teachers towards the use of digital tools for their professional development differs according to the Internet access, their competencies and motivation.* These three is-

sues should be taken into account by the in-service teacher training system in Ukraine.

Further research can be conducted on the comparative studies of European and domestic experience of the use of digital tools for distance education. The use of the digital tools for the assessment of teachers' and students' digital competence needs particular attention. Modern educational science requires a broader deployment of comparative studies and empirical research in the field of teachers' professional development regarding the use of ICT. This can help practitioners to construct the digital teaching environment for their subject areas and enrich their educational techniques and professional development.

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