ANALYSIS OF DEVELOPMENT LEVEL OF THE CERTAIN DIGITAL COMPETENCES OF THE UKRAINIAN EDUCATORS

Oksana Strutynska¹, Mariia Umryk²
Faculty of Informatics, National Pedagogical Dragomanov University in Kyiv, Ukraine, 9 Pirogova Str., Kyiv, Ukraine
¹o.v.strutynska@npu.edu.ua, ²m.a.umryk@npu.edu.ua

Abstract: The paper examines the analysis of development level of the digital competences of the Ukrainian educators according to the European Framework for the Digital Competence of Educators (DigCompEdu). For this purpose the authors have developed and conducted a survey of the target audience of Ukrainian educators composed of PhD students (in the field of Education), school teachers and University teachers. In accordance with the survey findings, the authors have analysed development level of the certain digital competences of the Ukrainian educators and proposed ways to improve this level.

Keywords: Digital Competence, Educators, European Framework for the Digital Competence of Educators, DigCompEdu.

INTRODUCTION

Innovative and modernized education and training are key priorities of the Europe 2020 strategy (Joint Report of the Council and the Commission on the implementation of the strategic framework for the European cooperation in education and training (ET 2020), Official Journal C 417/25 of 15.12.2015). Progress towards full integration of digital technologies into Education and Training is still needed not only for many EU countries, but also for Ukraine.

In accordance with the EU Parliament indications on key competences for lifelong learning (Recommendation 2006/962/EC of the EU Parliament and of the Council of 18 December 2006, Official Journal L 394 of 30.12.2006), digital competence is one of 8 key competences that are fundamental for each individual in a knowledge-based society.

According to the EU Framework for the Digital Competence of Educators (JRC SCIENCE FOR POLICY REPORT, Luxembourg: Publications Office of the EU, 2017), Digital Competence can be broadly defined as confident, critical and
creative use of ICTs to achieve goals related to work, employability, learning, leisure, inclusion and/or participation in society. Digital competence provides not only the ability to use digital technologies. It has also become increasingly necessary for the formation of creativity and critical thinking that is so meaningful in the 21st century.

This research presents our investigation of the European Framework for the Digital Competence of Educators (DigCompEdu) and development level of the certain Digital Competences of the Ukrainian educators according to DigCompEdu.

**Research goal.** This paper reviews the results of the recently completed study specifying development level of the certain Digital Competences according to the DigCompEdu. This attempts to address the following questions:

- analysis of the theoretical backgrounds of the research;
- analysis of the DigCompEdu;
- analysis of development level of the Digital Competences of the Ukrainian educators according to the survey conducted;
- consideration of the way to improve development level of the Digital Competences of the Ukrainian educators (from target group) and the future Computer Science teachers in the Dragomanov National Pedagogical University (future educators) according to DigCompEdu.

**Research methods.** The authors have used the following research methods and tools for the investigation (2017-2018):

- questionnaire;
- survey and interview of the Ukrainian educators;
- observation;
- documents and content analysis;
- meeting, conference, seminar, workshop, etc.;
- analysis of research papers.

**159 Ukrainian educators** have taken part in the present research. The Ukrainian educators from the target group (PhD students (in the field of Education), school teachers and University teachers from different Ukrainian regions) have been involved in this process.

The questionnaire was created during this project which purposed to gain data on development level of the Digital Competences of the Ukrainian educators according to DigCompEdu.
1. THE THEORETICAL BACKGROUNDS OF THE RESEARCH

In 2017 the authors have analysed the world trends of using of ICTs in education and scientific research. They include the following: (Learning and Skills for the Digital Era; Strutynska & Umryk, 2017):

- Student mobility and study abroad:
  - Institution-industry partnerships overseas are growing and diversifying;
  - International engagement is increasingly research-focused;
  - National governments increasingly seek to drive internationalization;
- Use of English as a medium of instruction;
- Increasing Use of Blended Learning;
- Increasing Use of Collaborative Learning Approaches;
- Rise of STEM, STEAM and STREAM Learning;
- Use of Open Educational Resources (OER);
- Use of Massive Open Online Courses (MOOCs).

The authors have conducted local prior-research on specifying awareness level of the Ukrainian educators regarding the abovementioned issues. The local survey was open for 6-month period between April 20, 2017 and July 20, 2017. It contained information about the modern ICT tools and trends in research, education and science (Strutynska & Umryk, 2017).

The findings of the local prior-research have shown that the level of knowledge and skills of the target group in regards to the use of the modern innovative learning technologies and ICT tools in research, education and science needs improvement (Strutynska & Umryk, 2017).

Analysis and comparing results of the similar research on the EU’s scholars and educators (Kramer & Bosman, 2016) have shown that the EU community uses more innovative and traditional tools in their professional activities.


Furthermore, the teaching professions face rapidly changing demands, which require a new, broader and more sophisticated set of competences than before. The ubiquity of the digital devices and applications requires the educators to develop their digital competences (DigCompEdu, 2017).
The European Framework for the Digital Competence of Educators dated 2017 has been used in the research. **DigCompEdu** framework is just for educators at all levels of education, including general and vocational training, special needs education, and non-formal learning contexts.

According to the European Framework for the Digital Competence of Educators (DigCompEdu, 2017), the six **DigCompEdu** areas focus on different aspects of educators’ professional activities:

![Figure 1. European Framework for the Digital Competence of Educators](https://publications.europa.eu/en/publication-detail/-/publication/fcc33b68-d581-11e7-a5b9-01aa75ed71a1/language-en (accessed on 15 August 2018))

Taking into account similar research (Kramer & Bosman, 2016; Strutynska & Umryk, 2016, 2017) and the **DigCompEdu**, authors have continued the research on specifying development level of certain Digital Competences of the Ukrainian educators.

The authors have analysed the findings of a new survey of the Ukrainian educators according to **DigCompEdu**.

### 2. ANALYSIS OF THE EUROPEAN FRAMEWORK FOR THE DIGITAL COMPETENCE OF EDUCATORS (DigCompEdu)

**DigCompEdu** includes three competence groups:

- *Educators’ professional competences* (group 1);
- *Educators’ pedagogic competences* (group 2);
- *Learners’ competences* (group 3).
These 3 groups include six areas with focus on different aspects of the educators’ professional activities (see in Fig. 1), (DigCompEdu, 2017).

*Professional Engagement* (area 1) consists of:

1.1. Organizational communication;
1.2. Professional collaboration;
1.3. Reflective practice;
1.4. Digital Continuous Professional Development.

*Digital Resources* (area 2) consist of:

2.1. Selecting digital resources;
2.2. Creating and modifying digital resources;
2.3. Managing, protecting and sharing digital resources.

*Teaching and Learning* (area 3) consist of:

3.1. Teaching;
3.2. Guidance;
3.3. Collaborative learning;

*Assessment* (area 4) consists of:

4.1. Assessment strategies;
4.2. Analysing evidence;
4.3. Feedback and planning.

*Empowering Learners* (area 5) consist of:

5.1. Accessibility and inclusion;
5.2. Differentiation and personalization;
5.3. Actively engaging learners.

*Facilitating Learners’ Digital Competence* (area 6) consist of:

6.1. Information and media literacy;
6.2. Digital communication and collaboration;
6.3. Digital content creation;
6.4. Responsible use;
6.5. Digital problem solving.
For specifying development level of the certain digital competences of the Ukrainian educators, authors have conducted survey for certain areas according to DigCompEdu. It needs to be indicated that the survey has considered competences of the first two groups (group 1 and group 2), which is the part of the core of DigCompEdu framework. The last group 3 (Learners’ digital competence) is captured by the European Digital Competence Framework for Citizens (DigCompEdu, 2017). Because of this, group 3 merits a dedicated area in the DigCompEdu framework. (DigCompEdu, 2017). Just due to this, group 3 will be considered in our further research. More details see below in Fig. 3.

The present research based on the target group who needs to improve their Digital Competences. This target group consisted of 159 Ukrainian educators. As noted in DigCompEdu "... the DigCompEdu framework is directed towards educators at all levels of education, from early childhood to higher and adult education..." (DigCompEdu, 2017). The research target group consists of the Ukrainian educators: PhD students (in the field of Education), school teachers and University teachers.

The distribution of respondents by educational role is shown in Fig. 2. It is important to note that the largest group of respondents is belonging to Computer Sciences field (68,5% of the participants).

As we can see from Fig. 2 the largest group of respondents is school teachers (63% of the participants – 100 people). The number of University teachers is 55 people (35% of the participants). The smallest group of participants is PhD students in the field of Education (2% of the participants – 4 people).

\[\text{Figure 2. Distribution of respondents by educational role} \]

\textit{Source: Own work}

The online questionnaire was elaborated in the Ukrainian using Google Forms for gaining data on the Ukrainian educators’ views and attitudes towards various
educational processes in some areas according to DigCompEdu. We have guaranteed participants only anonymous data would be shared.

The questionnaire was opening for 6-month period between December 20, 2017 and June 20, 2018. It contained information about some areas according to DigCompEdu.

The questionnaire consisted of 24 questions related to the Digital Competences group 1 and group 2 (areas 1-4), see in Fig. 3:

- 1 on educational role;
- 8 on area 1 (organizational communication, professional collaboration, digital continuous professional development);
- 3 on area 2 (selecting; creating and modifying; managing, protecting, sharing);
- 9 on area 3 (teaching, guidance, collaborative learning);
- 3 on area 4 (assessment strategies, feedback and planning).

![Figure 3. Digital Competences of Educators analysed in the research survey](https://publications.europa.eu/en/publication-detail/-/publication/fcc33b68-d581-11e7-a5b9-01aa75ed71a1/language-en (accessed on 15 August 2018))

3. ANALYSIS OF DEVELOPMENT LEVEL OF THE DIGITAL COMPETENCES OF THE UKRAINIAN EDUCATORS ACCORDING TO THE SURVEY CONDUCTED
We analysed development level of the Digital Competences of the Ukrainian educators according to the **DigCompEdu**. For this purpose the results of survey of certain Digital Competences groups are stated.

The data about development level of the some Digital Competences of the Ukrainian educators are presented in Tables 1-10 and Fig. 4-14 below.

**Area 1. Professional Engagement**

**Digital Competence 1.2. Professional collaboration**

*Q.*: Which tools do you use for professional collaboration?

Survey responses on professional collaboration tools usage are shown in Table 1 and in Fig. 4 (multiple answers are possible, that’s why the total responses can be more than 100%):

**Table 1**

Responses distribution on professional collaboration tools usage

<table>
<thead>
<tr>
<th>Professional collaboration tools</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trello</td>
<td>10,06%</td>
</tr>
<tr>
<td>CoSchedule</td>
<td>0,63%</td>
</tr>
<tr>
<td>Podio</td>
<td>1,89%</td>
</tr>
<tr>
<td>Virtual boards</td>
<td>37,11%</td>
</tr>
<tr>
<td>ICT tools for creating infographics</td>
<td>27,04%</td>
</tr>
<tr>
<td>ICT tools for creating mind maps</td>
<td>47,8%</td>
</tr>
<tr>
<td>I do not know about any of these tools</td>
<td>30,19%</td>
</tr>
</tbody>
</table>

*Source: Own work*
Digital Competence 1.4. Digital continuous professional development

Q.: Which digital sources and resources do you use to improve your own skills?

Survey responses on usage of digital sources and resources are shown in Table 2 and in Fig. 5 (multiple answers are possible, that’s why the total responses can be more than 100%):

Table 2

Responses distribution on usage of digital sources and resources

<table>
<thead>
<tr>
<th>Digital sources and resources</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOOC</td>
<td>48,43%</td>
</tr>
<tr>
<td>Thematic channels on YouTube</td>
<td>82,39%</td>
</tr>
<tr>
<td>Webinars</td>
<td>52,2%</td>
</tr>
<tr>
<td>TED</td>
<td>22,01%</td>
</tr>
<tr>
<td>Thematic blogs</td>
<td>27,04%</td>
</tr>
<tr>
<td>Social Networks Thematic Groups</td>
<td>48,43%</td>
</tr>
</tbody>
</table>
Digital sources and resources | Responses
---|---
Other Open Educational Resources | 32,08% 
Educational Resources of mobile applications | 52,83%

*Source: Own work*

**Figure 5. Survey responses on usage of digital sources and resources**

*Source: Own work*

**Q.** Which MOOC platforms do you use for continuous professional development?

Survey responses on MOOC platforms usage are shown in Table 3 and in Fig. 6 (multiple answers are possible, that’s why the total responses can be more than 100%): 

**Table 3**

<table>
<thead>
<tr>
<th>MOOC platforms</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coursera</td>
<td>35,85%</td>
</tr>
<tr>
<td>edX</td>
<td>17,61%</td>
</tr>
</tbody>
</table>
Analysis of Development Level of the Certain Digital Competences …

<table>
<thead>
<tr>
<th>MOOC platforms</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Udacity</td>
<td>6.29%</td>
</tr>
<tr>
<td>KhanAcademy</td>
<td>22.64%</td>
</tr>
<tr>
<td>CanvasNetwork</td>
<td>5.03%</td>
</tr>
<tr>
<td>FutureLearn</td>
<td>4.4%</td>
</tr>
<tr>
<td>FUN</td>
<td>5.66%</td>
</tr>
<tr>
<td>Prometheus</td>
<td>48.43%</td>
</tr>
<tr>
<td>I do not have an account on any of above mentioned platforms</td>
<td>27.04%</td>
</tr>
</tbody>
</table>

Source: Own work

Figure 6. Survey responses on MOOC platforms usage

Source: Own work

Analysis of the MOOC platforms usage is shown that most respondents (48.43% of the participants) prefer using Prometheus (http://prometheus.org.ua). Prometheus is a Ukrainian project for developing MOOCs (Strutynska & Umryk, 2016, p. 302). One of the reasons of using this provider by Ukrainian educators is because all courses are in Ukrainian.
Area 2. Digital Resources

Digital Competence 2.1. Selecting digital resources

Q.: Which scientometric databases do you use to identify, assess and select digital resources for teaching and learning?

Survey responses on scientometric databases usage to identify, assess and select digital resources are shown in Table 4 and in Fig. 7 (multiple answers are possible, that’s why the total responses can be more than 100%):  

Table 4

Responses distribution on scientometric databases usage to identify, assess and select digital resources for teaching and learning

<table>
<thead>
<tr>
<th>Scientometric databases</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google Scholar</td>
<td>67,92%</td>
</tr>
<tr>
<td>Web of Science</td>
<td>47,17%</td>
</tr>
<tr>
<td>Scopus</td>
<td>42,14%</td>
</tr>
<tr>
<td>Mendeley</td>
<td>5,03%</td>
</tr>
<tr>
<td>WorldCat</td>
<td>10,69%</td>
</tr>
<tr>
<td>Polska Bibliografia Naukowa</td>
<td>1,89%</td>
</tr>
<tr>
<td>Universal Impact Factor</td>
<td>11,32%</td>
</tr>
<tr>
<td>Research Bible</td>
<td>1,89%</td>
</tr>
<tr>
<td>Ukrainian scientific journals</td>
<td>37,11%</td>
</tr>
<tr>
<td>ERIH PLUS</td>
<td>1,89%</td>
</tr>
<tr>
<td>Socioindex</td>
<td>3,77%</td>
</tr>
<tr>
<td>Eurasian Scientific Journal Index</td>
<td>2,52%</td>
</tr>
<tr>
<td>Index Copernicus</td>
<td>27,67%</td>
</tr>
<tr>
<td>I do not know about any scientometric databases</td>
<td>20,13%</td>
</tr>
</tbody>
</table>

Source: Own work
Digital Competence 2.2. Creating and modifying digital resources

Q.: Which scientific portals do you use for creating and modifying digital resources?

Survey responses on scientific portals usage for creating and modifying digital resources are shown in Table 5 and in Fig. 8 (multiple answers are possible, that’s why the total responses can be more than 100%):

Table 5
Responses distribution on scientific portals usage for creating and modifying digital resources

<table>
<thead>
<tr>
<th>Scientific portals</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google Scholar</td>
<td>69,81%</td>
</tr>
<tr>
<td>Web of Science</td>
<td>13,84%</td>
</tr>
<tr>
<td>Scopus</td>
<td>11,95%</td>
</tr>
<tr>
<td>ResearchGate</td>
<td>5,66%</td>
</tr>
<tr>
<td>ORCID</td>
<td>23,27%</td>
</tr>
<tr>
<td>Mendeley</td>
<td>0,63%</td>
</tr>
</tbody>
</table>
Oksana Strutynska, Mariia Umryk

<table>
<thead>
<tr>
<th>Scientific portals</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academia.edu</td>
<td>10,69%</td>
</tr>
<tr>
<td>ResearchID</td>
<td>6.92%</td>
</tr>
<tr>
<td>MyScienceWork</td>
<td>0%</td>
</tr>
<tr>
<td>ERIH PLUS</td>
<td>0%</td>
</tr>
<tr>
<td>I do not have an account on any portal</td>
<td>23.9%</td>
</tr>
<tr>
<td>I do not know about any portal</td>
<td>6.92%</td>
</tr>
</tbody>
</table>

Source: Own work

Figure 8. Survey responses on scientific portals usage for creating and modifying digital resources

Source: Own work

As we can see from Table 4-5 and Fig. 7-8 Ukrainian educators use Google Scholar to identify, assess, select, create and modify digital resources the most. This may be due to the fact that Google Scholar is the most popular scientometric databases in Ukraine.

Digital Competence 2.3. Managing, protecting and sharing digital resources

Q.: Which tools/sites do you use to share your digital resources?

Survey responses on usage of tools/sites for sharing own digital resources are shown in Table 6 and in Fig. 9 (multiple answers are possible, that’s why the total responses can be more than 100%):
Table 6

Responses distribution on usage of tools/sites for sharing own digital resources

<table>
<thead>
<tr>
<th>Tools/sites</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google Drive</td>
<td>78,62%</td>
</tr>
<tr>
<td>OneDrive</td>
<td>42,77%</td>
</tr>
<tr>
<td>Facebook</td>
<td>64,78%</td>
</tr>
<tr>
<td>F1000Research</td>
<td>0%</td>
</tr>
<tr>
<td>F1000Workspace</td>
<td>0%</td>
</tr>
<tr>
<td>ORCID</td>
<td>14,47%</td>
</tr>
<tr>
<td>ResearchGate</td>
<td>5,03%</td>
</tr>
<tr>
<td>ScienceOpen</td>
<td>2,52%</td>
</tr>
<tr>
<td>Slideshare</td>
<td>13,21%</td>
</tr>
<tr>
<td>Prezi</td>
<td>28,3%</td>
</tr>
<tr>
<td>I do not use any of these tools</td>
<td>4,4%</td>
</tr>
</tbody>
</table>

Source: Own work

Figure 9. Survey responses on usage of tools/sites for sharing own digital resources

Source: Own work
The biggest group of respondents is University or school Computer Sciences teachers. As our Informatics curriculum at school is included of studying Google services that’s why the Google Drive are used the most for sharing digital resources.

Besides the next large group of responses belongs to Facebook. This may be due to the fact that Facebook is a popular social network among students.

**Area 3. Teaching and Learning**

**Digital Competence 3.1. Teaching**

Q.: *Which innovative approaches do you use in your professional activity?*

Survey responses on innovative approaches usage in own professional activity are shown in Table 7 and in Fig. 10 (multiple answers are possible, that’s why the total responses can be more than 100%):

**Table 7**

**Responses distribution on innovative approaches usage in own professional activity**

<table>
<thead>
<tr>
<th>Innovative approaches</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance learning or its elements</td>
<td>66,67%</td>
</tr>
<tr>
<td>Blended learning or its elements</td>
<td>53,46%</td>
</tr>
<tr>
<td>MOOC or its elements</td>
<td>33,96%</td>
</tr>
<tr>
<td>Mobile or its elements</td>
<td>32,08%</td>
</tr>
<tr>
<td>STEM / STEAM</td>
<td>20,75%</td>
</tr>
<tr>
<td>Gamification of learning</td>
<td>20,13%</td>
</tr>
<tr>
<td>Social Networks</td>
<td>57,86%</td>
</tr>
<tr>
<td>I do not use any of these technologies</td>
<td>5,66%</td>
</tr>
<tr>
<td>I do not know about any of these technologies</td>
<td>0,63%</td>
</tr>
</tbody>
</table>

*Source: Own work*
Figure 10. Survey responses on innovative approaches usage in own professional activity

*Source: Own work*

As we can see from Table 7 and Fig. 10 a lot of respondents use distance and blended learning or its elements. This may be due to the fact that large group of respondents relates with Computer Sciences field.

**Digital Competence 3.2. Guidance**

**Q.:** Which ICT tools, digital technologies and services do you use in your professional activity?

Survey responses on usage of ICT tools, digital technologies and services in own professional activity are shown in Table 8 and in Fig. 11 (multiple answers are possible, that’s why the total responses can be more than 100%):

Table 8

<table>
<thead>
<tr>
<th>ICT tools, digital technologies and services</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Webinars and appropriate ICT tools</td>
<td>37,11%</td>
</tr>
<tr>
<td>Virtual boards and appropriate ICT tools</td>
<td>30,82%</td>
</tr>
<tr>
<td>ICT tools for survey and testing</td>
<td>62,26%</td>
</tr>
</tbody>
</table>
ICT tools, digital technologies and services | Responses
---|---
Mind maps and appropriate ICT tools | 47.8%
Infographics and appropriate ICT tools | 23.27%
ICT tools for creating e-books | 19.5%
Word cloud and appropriate ICT tools | 12.58%
Google Classroom | 25.79%
I do not use any of these ICT tools | 14.47%
I do know about any of these ICT tools | 3.77%

*Source: Own work*

**Figure 11. Survey responses on usage of ICT tools, digital technologies and services in own professional activity**

*Source: Own work*

As we can see from Table 8 and Fig. 11 Ukrainian educators use ICT tools for survey and testing the most. That's why they need to improve present Digital Competence for further using ICT tools, digital technologies and services in their own professional activity.

**Digital Competence 3.3 Collaborative learning**
Q.: Do you think it is necessary to use digital technologies to foster and enhance learner collaboration?

Survey responses on usage of the digital technologies to foster and enhance learner collaboration are shown in Fig. 12:

![Survey responses on usage of ICT tools, digital technologies and services in own professional activity](image)

Figure 12. Survey responses on usage of ICT tools, digital technologies and services in own professional activity

Source: Own work

Large part of responses "Difficult to answer" may be due to the fact that respondents don’t know about digital technologies to foster and enhance learner collaboration.

Area 4. Assessment

Digital Competence 4.1. Assessment strategies

Q.: Which ICT tools and digital technologies do you use in your professional activity for survey and testing?

Survey responses on usage of ICT tools, digital technologies and services for survey and testing are shown in Table 9 and in Fig. 13 (multiple answers are possible, that’s why the total responses can be more than 100%):

Table 9

Responses distribution on usage of ICT tools, digital technologies and services for survey and testing
ICT tools, digital technologies and services for survey and testing | Responses
---|---
Google Form | 76,1%
Kahoot | 28,3%
Socrative | 1,89%
Quizworks | 2,52%
Gnowledge | 0%
Monkey Survey | 5,03%
ICT tools built into distance learning platforms | 36,48%
I do not use any ICT tools for survey and testing | 13,21%
I do not know about any of these ICT tools | 2,52%

*Source: Own work*

Figure 13. Survey responses on usage of ICT tools, digital technologies and services for survey and testing

*Source: Own work*

As we can see from Table 9 and Fig. 13 Ukrainian educators use Google Form for survey and testing the most. The reason of this fact is explained above.

Digital Competence 4.3. Feedback and planning
Q.: Do you consider MOOCs as effective and needed technologies for feedback and planning?

Survey responses on usage MOOCs as effective and needed technologies for feedback and planning are shown in Table 10 and Fig. 14 (scale from 1 – ineffective to 10 – effective and very needed):

### Table 10

Responses distribution on usage MOOCs as effective and needed technologies for feedback and planning

<table>
<thead>
<tr>
<th>Scale</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,88%</td>
</tr>
<tr>
<td>2</td>
<td>1,26%</td>
</tr>
<tr>
<td>3</td>
<td>3,14%</td>
</tr>
<tr>
<td>4</td>
<td>4,4%</td>
</tr>
<tr>
<td>5</td>
<td>15,09%</td>
</tr>
<tr>
<td>6</td>
<td>13,21%</td>
</tr>
<tr>
<td>7</td>
<td>18,24%</td>
</tr>
<tr>
<td>8</td>
<td>16,35%</td>
</tr>
<tr>
<td>9</td>
<td>15,72%</td>
</tr>
<tr>
<td>10</td>
<td>11,32%</td>
</tr>
</tbody>
</table>

*Source: Own work*

![Figure 14. Survey responses on usage MOOCs as effective and needed technologies for feedback and planning Source: Own work](image)
As we can see from Table 10 and Fig. 14 Ukrainian educators are ready to use technologies for feedback and planning. In our further research, we are planning to outline the ways how to improve their Digital Competences.

On the one hand, finding of the survey conducted shows that the Ukrainian educators need improvement of the development level of their Digital Competences. From the other hand, the survey's results also show that Ukrainian educators are ready to use digital resources, modern ICT tools and trends in their professional activity.

4. DISCUSSION

So, this paper addresses the following questions: analysis of development level of certain digital competences of the Ukrainian educators.

Last research question about the ways of increasing the development level of the Digital Competences according to DigCompEdu requires more details explanation.

Based on the research conducted, the authors could propose ways to improve development level of the digital competences according to DigCompEdu for different groups to the Ukrainian educators:

a. Make the Ukrainian educators aware of the EU Standards and Guidelines on Digital Competence Framework for Educators (for all the groups of the Ukrainian educators).

b. Increase of the awareness of the EU Digital Competence framework for educators:
   - for PhD students (in the field of Education) – improve level of development level of the Digital Competences by updating of curriculum.
   - for school teachers – level of development level of the digital competences by preparing and conducting of the seminars on work with ICT tools and digital resources. The next step is to create appropriated online courses.
   - for University teachers – level of development level of the Digital Competences by encouraging them to take part in summer schools of
academic development, conference and international projects related with Digital Competences.

c. create questionnaire for target groups of the Ukrainian educators for self-assessment in the digital competence according to basic materials from **DigCompEdu**.

Also it needs more detailed examination of hypothesis of research about group 3 (Learners’ digital competence) and unresearched elements of the abovementioned group 1 and group 2.

The authors plan the following activities in their further research on the development level of Digital Competences of Ukrainian educators:

- analysis of progression model "…linked to the six proficiency levels used by the Common European Framework of Reference for Languages (CEFR), ranging from A1 to C2…” (DigCompEdu, 2017, p. 28-29);

- preparation of survey for specifying development level of the certain Digital Competences according to proficiency levels of the progression model (from A1 to C2);

- development of the methods for improvement of the proficiency level of Digital Competence for each group of Ukrainian educators.

5. CONCLUSIONS

According to The European Commission’s science and knowledge of service learning and skills are key contributors to the society and economy. As modern societies and economies are changing due to, amongst others, globalization and technological progress, a fundamental transformation of education and training throughout Europe is required to deliver the knowledge and skills needed for growth, employment and participation in the society. The teaching professions face rapidly changing demands, which require a new, broader and more sophisticated set of competences than before. The ubiquity of digital devices and applications, in particular, requires educators to develop their digital competence.

Improvement of development level of the Digital Competences is a new important trend in the modern education. This is the transformation of the educational process inside and outside of the educational institutions.

Findings of the conducted survey of the Ukrainian educators have shown the insufficient development level of their Digital Competences. However, the Ukrainian educators are ready to use digital resources, modern ICT tools and trends in their professional activity.

Our future work is to elaborate a new survey for the Ukrainian educators. In future experiments, we will study their proficiency level of the Digital Competences
(from A1 to C2). Also it is planned to consider ways of development of the Digital Competences level for group 3 (Learners’ competences).

Continuation of the experimental process is a key issue for improving pedagogical education in Ukraine in general.

REFERENCES


