DIGCOMPEDU FRAMEWORK IN HIGHER EDUCATION: DIGITAL COMPETENCY LEVEL OF FACULTY MEMBERS

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Abstract

In the future, it is expected that universities will be designed to include face-to-face and virtual campuses. Virtual campuses enable disadvantaged students to receive an equivalent education to their peers without falling behind, and thus they help to put into practice inclusive education. In this context, determining the digital competencies of instructors who are expected to continue online education is an essential research topic in higher education. In this study, we aimed to provide suggestions that can strengthen the virtual campus dimension of universities by determining the digital competence levels of instructors. The study was designed as survey research. As a data collection tool, Digital Competence Scale for Educators was used, and the data were analyzed descriptively. The data collection tool consisted of 2 parts: demographic information and digital competence scale. 234 faculty members who are 96 men (41%) and 138 women (59%), participated in the study voluntarily. 71.8% of the participants stated that they had lectured at the university level for 10 years or more, and 59.8% indicated that they lectured both online and face-to-face. The findings showed that approximately 80% of those described their digital literacy as adequate or quite adequate. Also, the average score on the Digital Competence Scale was found to be 46.26 out of 88. This study will present the DigCompEdu digital competency levels (Explorer, Integrator, Expert, Leader, Pioneer) of faculty members in Turkey. As a result, this study will contribute to the design, development, and integration of plans and policies on improving the digital competence levels of faculty members who are expected to be the educators of virtual classrooms.

Keywords: digital competency, DigCompEdu framework, higher education

Introduction

Digital competency is an indispensable skill in today's world. According to a study (Redecker, 2017) 44.5% of the European Union's population aged 16 to 74 lacks sufficient digital skills to participate in society and the economy. Therefore, the European Commission aims to increase the digital competency level of society with the digital competency framework until 2030. For this purpose, several digital competence frameworks or models have been created, such as ICT Competencies for Teachers, The Digital Practitioner Framework, DigComp, and DigCompEdu (Redecker, 2017; Ecclesfield et al., 2012; UNESCO, 2008). The Digital Competency (DigComp) framework was published in 2013. DigComp offers a common language for identifying and describing the key areas of digital competence and offers a joint framework at the European level. Among these, the DigCompEdu framework, also known as Digital Competence Framework for Educators, is the current and well-known framework that can be used in national or international contexts. It presents both a general framework for the skills that educators should acquire and a scale for these competencies (Caena & Redecker, 2019). DigCompEdu Framework examined the competencies educators should have in 6 competence areas ("professional engagement, digital resources, teaching and learning, assessment, empowering learners, and facilitating learners' digital competence") and 22 structured competencies (Redecker, 2017, p.16). These areas and competencies provide a structured way for them to determine and enhance their digital competency levels. Besides these, each DigCompEdu framework individual competency is described along six competency levels (A1 to C2; A1: Newcomer, A2:Explorer, B1:Integrator, B2: Expert, C1: Leader, C2: Pioneer) with cumulative progress. Teachers at the A1 and A2 levels can employ technology in some areas and recognize the potential use of digital technologies to improve pedagogical and professional performance. Teachers at the intermediate level (B1 and B2) can already use digital technologies in a variety of contexts and ways. Teachers with C1 or C2 levels (the highest degree) can share their knowledge with their colleagues, experiment with innovative complicated technology, and create new instructional techniques and evaluation procedures.

After the Covid-19 pandemic, digital competence gained importance among educational institutions. Institutions experienced, especially in online learning environments or distance education technologies and instructors with high digital competency skills, were able to manage this process better. As stated by the European Commission, today, digital competency is a key skill. However, digital competency is one of the difficulties that educators encounter (Basilotta-Gómez-Pablos et al., 2022). In addition to these, it is possible for the students, who will be the employees of the future, to be able to use digital environments and tools effectively in accordance with the changing conditions to exist both in society and their professional life if they become digitally competent. Educators are students' role models to a certain extent in higher education institutions. Therefore, it is important to identify and develop educators' current digital competence skills in higher education institutions (Redecker, 2017).

In this context, this study aims to determine faculty members' digital competence levels. The research questions of the study were determined as follows:

- What is the digital literacy level perceived by the participants? (RQ1)
- What are their digital competence levels? (RQ2)
- What is the competency stage of the participants according to the DigCompEdu framework? (RQ3)

Method

This study was designed as survey research. The Digital Competence Scale for Educators (DigCompEdu) was used as a data collection tool in the study. The data collection tool involves two parts: the demographic features (gender, lecturing time, course delivery method, a question related to perceived digital literacy level consisting of 4 items from inadequate to quite adequate) of participants and the DigCompEdu scale items. This scale was developed by Redecker (2017) and translated into Turkish by Toker et al. (2021). The scale consists of 22 items. The answers given to each item take values between 0 and 4. There are no reverse-coded items in the scale. For the implementation and data collection phases of the study, ethics committee approval was obtained from Dokuz Eylul University, and the scale was applied based on online and voluntary participation in 2021-2022. In the study, the data were analyzed descriptively.

The Study Group

The characteristics related to gender, lecturing time at the university level, and course delivery method of the participants are shown below (Figure 1). 234 faculty members, 59% women (n=138) and 41% men (n=96), participated in the study. 71.8% of the participants stated that they had lectured at the university level for 10 years or more. 59.8% of the participants indicated that they lectured both online and face-to-face (blended).

Figure 1. Characteristics related to gender, lecturing time at the university level, and course delivery method of the participants.

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Man	96	41.0	41.0	41.0
	Woman	138	59.0	59.0	100.0
	Total	234	100.0	100.0	

Lecturing time at the university level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-3 year	26	11.1	11.1	11.1
	4-6 year	15	6.4	6.4	17.5
	7-9 year	25	10.7	10.7	28.2
	10 years or more	168	71.8	71.8	100.0
	Total	234	100.0	100.0	

How do you conduct your courses in the fall of 2021-2022?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Face-to-face (f2f)	67	28.6	28.6	28.6
	Online	27	11.5	11.5	40.2
	Blended (face-to-face &online)	140	59.8	59.8	100.0
	Total	234	100.0	100.0	

Findings

RQ1: What is the digital literacy level perceived by the participants?

The finding related to the perceived digital literacy of the participants is presented in Table 1. Findings show that approximately 80% of participants described their digital literacy as adequate (n=120) or quite adequate (n=67). Besides this, while 19.7% of participants (n=46) stated their digital literacy level as "little adequate", 4% of those stated it as "inadequate".

Table 1. Participants' digital literacy levels

Perceived digital literacy level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Inadequate	1	.4	.4	.4
	Little adequate	46	19.7	19.7	20.1
	Adequate	120	51.3	51.3	71.4
	Quite adequate	67	28.6	28.6	100.0
	Total	234	100.0	100.0	

RQ2: What are their digital competence levels?

The findings related to the digital competence level of the participants are presented in Table 2. It was found that the participants' mean score on the DigCompEdu scale was 45.26.

Table 2. Participants' Mean Scores from DigCompEdu Scale

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Digital competence_total score	214	14	87	45.26	15.468
Valid N (listwise)	214				

RQ3: What is the competency stage of the participants according to the DigCompEdu framework?

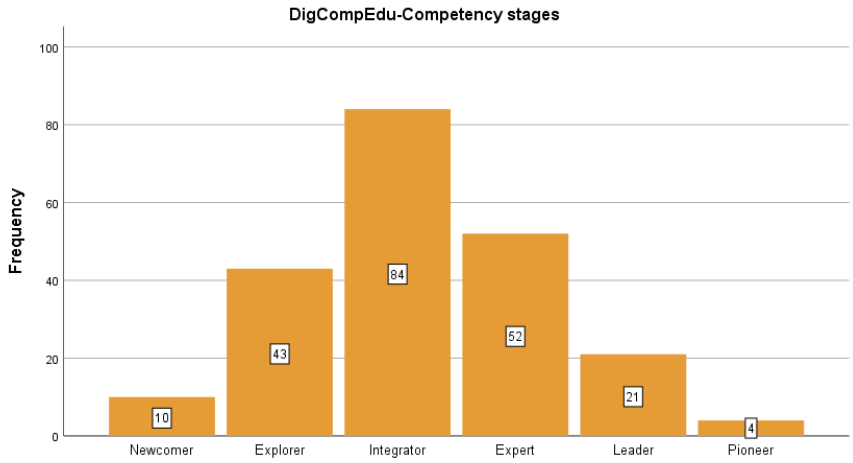
DigCompEdu competency stages of participants are shown in Table 3 and Figure 2. Findings show that 35.9% of the participants (n=84) were Integrator, 22.2% were Expert (n=52), and 18.4% (n=43) were Explorer. There are participants at different digital competence stages.

Table 3. Participants' DigCompEdu Competency Stages

DigCompEdu-Competency stages

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Newcomer (A1)	10	4.3	4.7	4.7
	Explorer (A2)	43	18.4	20.1	24.8
	Integrator (B1)	84	35.9	39.3	64.0
	Expert (B2)	52	22.2	24.3	88.3
	Leader (C1)	21	9.0	9.8	98.1
	Pioneer (C2)	4	1.7	1.9	100.0
	Total	214	91.5	100.0	
Missing	System	20	8.5		
Total		234	100.0		

Figure 2. The view of the participants' digital competency stages



Conclusion and Recommendations

This study aimed that to determine the digital competence levels of faculty members within the DigCompEdu Framework. 234 faculty members from different universities participated in the study, which was designed as a survey study. According to the study's findings, although, the participants perceived their digital literacy levels were adequate or quite adequate, the digital competency score averages of the participants were found to be moderate. While the maximum score obtained from the digital competence scale is 88, the average score of the participants on the scale was 45.26. This finding can be interpreted as the faculty members finding themselves competent in the context of digital competency, but there are aspects that are open to improvement in the digital competence skills of the participants. Digital competence for educators requires a collection of knowledge, skills, and abilities that make it possible to use digital tools effectively to develop learning environments. Another important result is that participants are in different digital competency stages. With the help of the progression model from newcomer (A1) to pioneer (C2) on the DigCompEdu framework,

educators can identify their strengths and weaknesses related to digital competency (Redecker, 2017). In the study, it has been determined that many participants' digital competency stage is the integrator. This result showed that faculty members used digital technologies directly or indirectly in their learning and teaching processes. In support of this situation, it was determined that most participants conducted their courses with a blended approach in the 2021-2022 fall semester. The study results found that apart from the integrators, there were participant instructors who belonged to the Expert level. Related to these competency levels (from A1 to C2), this progression model on the DigCompEdu framework aims to regard educators' current performance on DigComp and motivate them aimed at improving their digital competency skills. With the Covid-19 pandemic, faculty members had to use digital tools in their lessons, positively impacting their ability to use digital tools. In the literature, there are studies showing that instructors' skills in using digital resources have improved after the pandemic (Chakraborty et al., 2021; Winter et al., 2021). In Turkey, the total number of faculty members is 183.224 (YOK, 2022). Faculty members' digital competency level is one of the key components to ensure quality assurance in distance education in higher education institutions (YOKAK, 2022).

In summary, the results from the study showed that besides the fact that there are faculty members with different digital competency levels in higher education, there are also aspects that are open to improvement in digital competency skills. Technology has been advancing rapidly, and educators are expected to update their digital knowledge and skills for changing situations. It is quite important for today's instructors to have the skills to use new technologies and approaches that positively affect learning processes, especially in e-learning environments.

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