

Self-Evaluation of University Teachers' Digital Competence in Emergency Remote Teaching and Their Emotions Surrounding Student Crisis E-Learning During The 2020 Pandemic*

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Abstract

The main aim of the research was focused on the self-assessment of university teachers' level of digital literacy (DL) and on the emotions accompanying them during crisis e-learning & teaching during the period of the pandemic in 2020. The research was carried out via online questionnaire (with responses along a 7-point Likert scale) among university teachers (94) at the largest Polish pedagogical university. The research sought to answer the following: what is the level of digital competence of teachers and to what extent is it related to the emotions accompanying them during remote education (according to the teachers' own assessment)? The results offer the conclusion that the respondents appreciated the opportunity to develop their initially low digital skills during the period of crisis remote teaching and they perceive their emotions as being mostly positive during the second wave of Covid-2019. This is in stark contrast to the findings obtained during the first wave of the pandemic described in the current literature. There is evidence here of a coping strategy which allowed the teachers to adapt to the crisis circumstances and to use the time for professional development. In the light of the results obtained, it can be concluded that positive emotions related to the development of university teachers' digital skills during the pandemic can serve as an effective tool for regulating negative emotions and can influence the attitudes of teachers and students whose education is disrupted by stressful periods such as a pandemic.

Keywords: emergency remote teaching and learning, crisis e-learning, university teachers, digital literacy, emotions, self-evaluation.

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Introduction

In order to limit the negative effects of the COVID-19 pandemic, most countries around the world decided to temporarily close educational institutions. However, learning did not stop and in many cases went fully online as schools and universities provided distance learning. While the introduction of distance learning was key to ensuring continuity of education during and after the lockdown, students, teachers, and members of academic society were exposed to certain negative consequences. Di Pietro et al (2020) in a report prepared for the European Commission indicate that quarantined participants in the educational process spend less time studying compared to open schools and many may feel stressed and anxious, which may negatively affect their learning outcomes. Moreover, this type of stress for all stakeholders in the field of higher education, especially students and teachers, can be compared with the symptoms of post-traumatic stress disorder (PTSD), which includes poor concentration, depression, anxiety, and insomnia (Di Pietro, 2018, as cited in Di Pietro et al, 2020). The teachers also feel anxious and overwhelmed by the personal fear that someone in their family will catch SARS-CoV-2, as well as the more vocational concerns related to the need to adapt to teaching using ICT (Brackett & Cipriano, 2020).

The transition from offline learning to online learning may also have had a negative impact on the quality of teaching due to the varying levels of the digital skills of teachers and, consequently, the deterioration of the emotional state of those who cannot cope with ICT tools. It is of key importance to improve the digital competences of academic teachers of all ages in the use of online tools not only in technical but also didactic terms.

Based on the data collected, Tomczyk (2020) noticed that digital literacy (DL) is a heterogeneous concept, the Dunning-Kruger effect is noticeable among the teachers in the context of the evaluation of DL related to digital safety, and DL is one of the key protective factors in digital safety, viewed holistically, in schools. Tomczyk (2020) also underlined that developing DL in the context of its positive implementation within the teaching and learning processes is as important as knowing the negative aspects of the common use of new media. Thus, diagnosing and facilitating the development of DL has become one of the key challenges faced by schools today. Statistical analysis of the data obtained by Portillo et al (2020) showed that the greatest difficulties reported by educators are the deficiencies in their training in digital skills, which resulted in them facing a greater workload during the lockdown period and experiencing high stress during the period of crisis remote learning and teaching. Additionally, education systems around the world should increase their resilience to unexpected situations in order to effectively develop the quality of education regardless of the difficulties presented by the situation.

It is assumed, following Airasian & Gullickson (1997), that teacher self-evaluation encourages teachers to examine their personal teaching activities in order to understand and improve their practices. There are two main reasons for studying the emotional attitudes of teachers. According to Maccoby (1972) emotional attitudes are likely to determine the behavior of individuals, most particularly during a crisis, when traditional ways of making decisions break down. Second, understanding the nature of emotional attitudes is essential to the analyses of new plans for society.

Due to the fact that the competences of academic teachers and their emotions surrounding crisis e-learning and emergency remote teaching during the pandemic are very important factors affecting learner outcomes, academic teachers nonetheless constitute a group whose level of substantive competence as well as opinions and self-assessment in e-learning crisis situations may have an impact on the future of academic education after the pandemic.

Theoretical Framework

The conceptual background of the research considered teacher self-evaluation in terms of DL level, and their emotional attitudes related to teaching and learning in a crisis situation. The starting point was the ICT-assisted academic learning process, known as crisis e-learning or Emergency Remote Teaching (ERT), although these concepts are not identical. Rahiem (2020) used the term "Emergency Remote Learning (ERL)" to differentiate between the education that took place during the school lockdown and the regular delivery of education in normal times. The term "Emergency Remote Teaching (ERT)" is used by Hodges et al. (2020) to refer to a temporary change from instruction delivery to alternative delivery due to crisis circumstances. Millman (2020) refers to the same phenomenon as emergency remote teaching and learning, or "pandemic pedagogy". The author's proposal for the scope of the above-mentioned concepts is presented in Fig. 1. The scheme is related to the fact that teaching and learning are two different processes that together make up the didactic process called education, but this proposal is closely related to the considerations of the definition of the term by Rahiem (2020), Hodges et al. (2020) and Millman (2020).

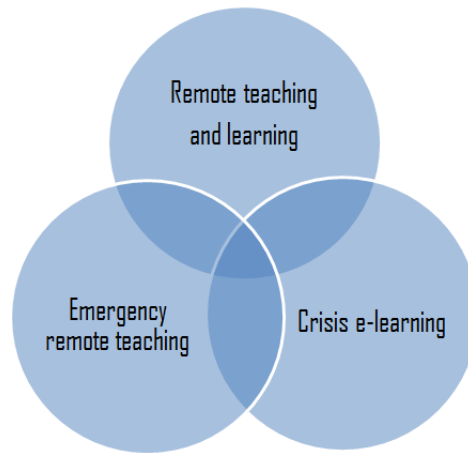


Fig. 1: The scope of the terms related to remote education used in the research

Affouneh et al. (2020) claim that because Emergency Remote Teaching (ERT) is not usually planned in advance, it involves a sudden shift from traditional teaching to remote forms on the occasion of emergency situations like the outbreak of Coronavirus. Moreover, educators have to work in a highly stressful situation while having no knowledge of when the crisis will come to an end. Due to the unplanned nature of e-Learning in crisis situations, academic teachers may encounter many obstacles in accommodating and embracing e-Learning in ERT.

Technological support, the availability of infrastructure, and the perception of lecturers and students, are significant factors in the effectiveness of the online mode in the teaching-learning process. Many universities operate with only the physical classroom in mind, and lack the infrastructure and preparation for online classes. Faculties were not mentally and technically prepared for online teaching, which meant that in many cases they had to face the likelihood of psychological stress, anxiety, and trauma for academic teachers and students. At the beginning of the pandemic, universities were required to rapidly convert classroom courses into online classes (Gautam & Gautam, 2021; Basilaia & Kvavadze, 2020). In terms of ERT design, the university's previous experience in conducting distance learning is very important, with this including the attitude of academic teachers to online classes, applied strategies and teaching styles, and the university's technological facilities.

Based on the theoretical perspective of revolutionizing modern education through the implementation of meaningful e-learning (Khan, 2016), the broaden-and-build theory of positive emotions (Fredrickson, 1998, 2001) and the crisis decision theory (Sweeny, 2008) (Table 1) the research was planned and focused on the analysis of the survey, and the self-assessment of academic teachers in terms of their preparation for the use of remote education solutions during the COVID-19 pandemic and their emotional attitude to crisis e-learning was verified.

Table 1: Theoretical perspective of the research

Theory	Key Factors	Practical Training
Theory of revolutionizing modern education through the implementation of meaningful e-learning (B.H. Khan, 2016)	e-learning framework, meaningful learning environment, student-centered environment, engagement and interaction of the students	The Digital Literacy level influences the work of teachers and their ability to create a student-oriented environment in various ICT-assisted learning situations. Engaging students in the learning process can be a remedy for teachers' stress related to crisis remote learning and teaching. The research undertaken carries a number of implications relating to the connection between the DL of teachers and their behavior and attitudes in the stressful educational situation during the pandemic.
The broaden-and-build theory of positive emotions.	positive and specific negative emotions, functions of emotions,	The models based on specific action tendencies provide sound and compelling

(B.L. Fredrickson, 1998, 2001)	adaptive value of emotions	descriptions of the form and function of many negative emotions. The new perspective illuminates why and how positive emotions might serve as effective tools for regulating negative emotions. The research undertaken has educational implications in the development of this point of view, mainly in the area of the adaptive value of emotions in teachers work.
The crisis decision theory (K. Sweeny, 2008)	health behavior, decision making, negative events	The social context, personal motivations, and automatic processing can influence decision processes in crisis decision theory. The crisis decision theory includes some of the same predictors of behavior as prevention-focused theories do, as it addresses responses to negative events that have already occurred. The research undertaken is connected with the negative event, in this case the pandemic, and the teachers' self-assessment of their didactic capabilities in the area of ICT during this time.

The connections between the main theoretical areas of importance to the research are presented at the Fig.2.

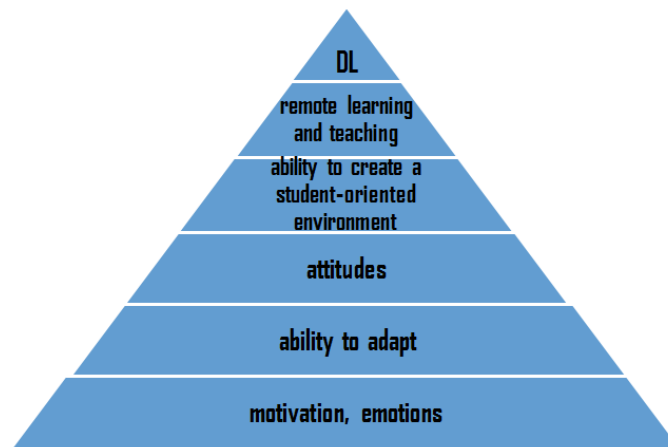


Fig. 2: The connection between the main theoretical areas and the key factors of importance to the research

Research carried out by Coman et al (2020) during the Covid-19 pandemic showed that universities were not prepared to have to offer exclusively online education, and the problems in this regard centered around the lack of technical skills of academic teachers and thus inappropriately adapted teaching styles to the online environment. It was also found that teachers who are open-minded, flexible, and interested in self-development sought to improve their pedagogical skills in remote teaching. However, some groups of teachers are still reluctant to improve their competences in the use of new online tools and use only the basic functions of e-learning platforms in the courses they offer. The difficulty here is in the emotional attitude of academic teachers to admit their ignorance in the use of ICT tools and their reluctance to seek support in this regard, which translates into an increase in negative emotions. At the end of March 2020, a research team from the Yale Center for Emotional Intelligence and Collaborative for Social Emotional and Academic Learning (CASEL) showed that the situation of long-term stress translated into teachers' lower performance and executive functions and worse memory, reducing their ability to be effective teachers (Brackett & Cipriano, 2020). Some of the main difficulties reported by academic teachers with regard to online courses are due to the complexity of the teaching situation as well as

shortcomings in their planning and organization. Therefore, the responsibility for designing effective remote teaching and learning environments rests not only on the shoulders of academic teachers, but also on universities in terms of supporting the professional development of employees of individual departments. On the other hand, academic teachers' negative attitudes should evolve based on the assumption that crisis e-learning is a way to enrich and extend the educational opportunities available to all universities, and for the members of the academic community it is a way to learn flexibility, personalize teaching and learning, and experiment, discovering creative alternatives and reflecting on one's own practices (Rapanta et al., 2020).

So far, there have been no reported studies connected with academic teachers' self-assessment of their digital competences and their accompanying emotions during crisis learning and teaching with the use of ICT tools during the pandemic. This highlights the originality of the research topics undertaken, both in terms of the subject of the research and the research sample. Fig. 3 shows the main areas of the conceptual framework of the research.

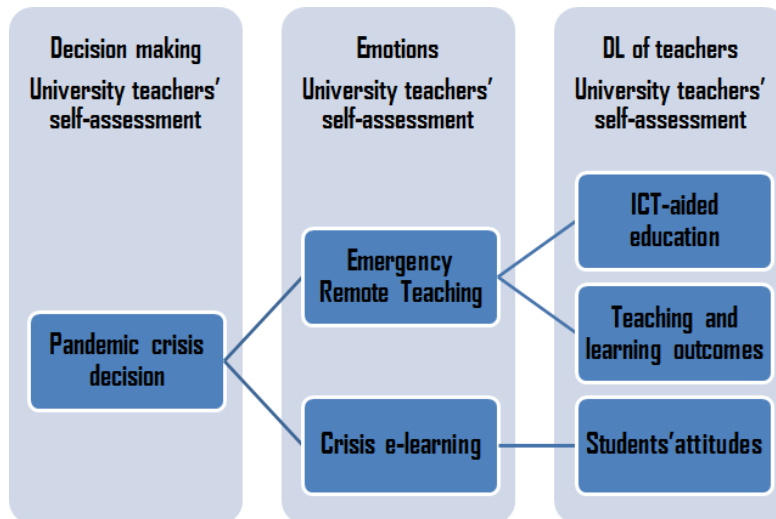


Fig 3. The main areas of the conceptual framework

Research objectives

The aim of the research was to show the level of preparedness of academic staff (teachers) in the use of remote education solutions during the COVID pandemic. The research also aimed to present their emotional attitude towards crisis e-learning. Both variables related to self-evaluation of digital competence (digital literacy, DL) in e-learning and emotional attitude towards crisis e-learning and were contrasted with each other and with the sociodemographic variables. The following research questions were considered:

- RQ1: How do the academic teachers at the Pedagogical University of Cracow evaluate their own digital competence in e-learning?
- RQ2: Is digital competence in e-learning differentiated by sociodemographic variables?
- RQ3: What emotions is crisis e-learning triggering in the sample of academics surveyed?
- RQ4: How can the study sample be categorised according to the emotions that crisis e-learning triggers?
- RQ5: To what extent does the self-evaluation of e-learning-related competences co-evolve with emotions about crisis e-learning?

Research Procedure

In formulating the research, the focus was on analyzing the contexts that emerged in relation to academic education during the pandemic. It was decided to empirically explore the area of theoretical scientific research by drawing attention to the emotional factors conditioning the improvement of academic teachers' competences in the field of ERT and ERL in the

context of the pandemic. This research significantly contributes to the development of current and future higher education management in terms of online teaching-learning practice.

The diagnostic survey was conducted in the academic year 2020/2021. A questionnaire designed by researchers at the Pedagogical University was used to examine the self-evaluation of academic teachers in the field of digital competences in e-learning, their knowledge of the tools that enable remote learning, and their ability to use the Moodle e-learning platform and MS Teams application, as well as their attitudes and emotions related to crisis e-learning. The respondents were a heterogeneous nonprobability sampling representing the Pedagogical University of Crakow.

The research used a nonprobability sampling of research participants by sending a link with the questionnaire to all academic teachers participating in ICT training via their university e-mail address. Nonprobability sampling was used due to the fact that the objective was to create a close representative sample and the respondents were selected on the basis of the arbitrary decision made by the researchers. The features characteristic of a specific social category, namely features characteristic of employees of the same institution, were important here. Additionally, the researchers had an appropriately high level of knowledge of the study population (Kothari, 2009; Babbie, 2012; Babbie, 2016). Using the nonprobability sampling of selecting the research sample, data from 94 respondents were collected.

The research was conducted using a structured questionnaire containing statements developed on the Likert attitude scale. The data was collected online. The research participants were informed about the objective of the study and gave their informed consent to participate in it. E-mail addresses were not collected so as to maintain anonymity and confidentiality. The average time needed to complete the questionnaire was 10 minutes.

The data obtained as a result of the research were compiled and analyzed using descriptive statistics (factor analysis (EFA): Kaiser-Meyer-Olkin test; Bartlett's test X^2 ; Chi-Squared; RMSEA confidence; Cronbach's Alpha). The data obtained concerned both synchronous and asynchronous contact between lecturers and students after switching from classroom-based to online classes without advanced knowledge in this field, in order to understand the motivation of academic teachers, and to improve teaching practices in remote teaching. Fig. 4 presents the research procedure.

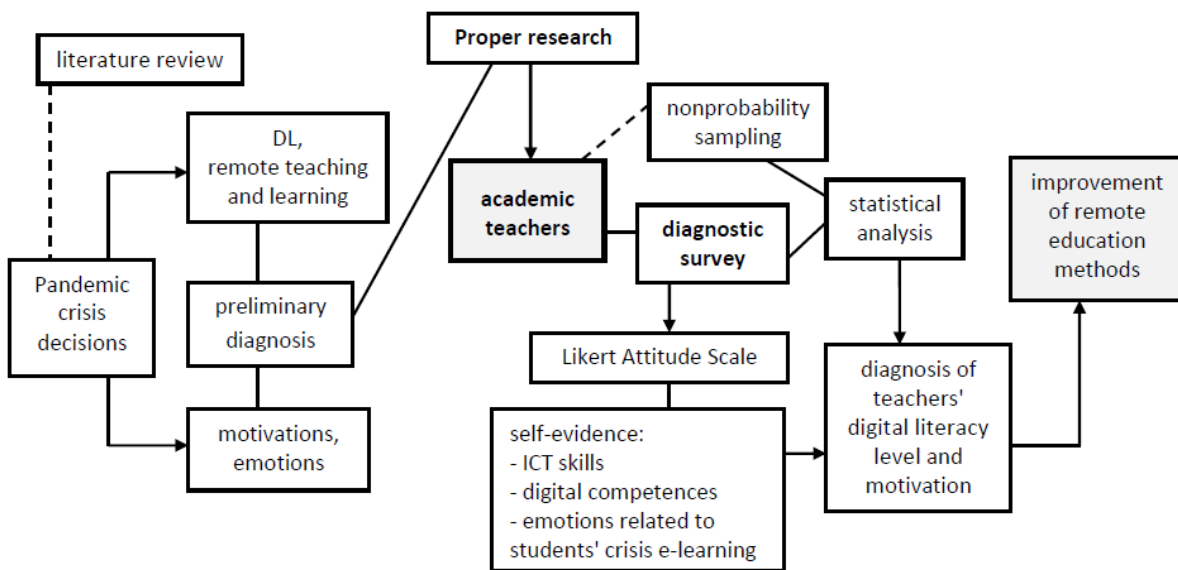


Fig 4. Research procedure

Research Tool

The tool was designed by researchers from the Pedagogical University of Cracow. The following variables were extracted in the research tool:

- Self-evaluation of digital competence in e-learning. Responses were placed on a 7-point Likert scale from 1 - very low to 7 - very high. The following were assessed: general knowledge of various tools enabling remote teaching; ability to use the university's e-learning platform, Moodle; ability to use the MS Teams application; and

efficiency in conducting online consultations (audio-video). The tool was characterised by a satisfactory level of internal consistency amounting to Cronbach's Alpha 0.782.

- Emotions associated with crisis e-learning. Responses for this variable were placed on a 5-point Likert scale ranging from: 1- do not occur at all to 7 - occur very often. The internal consistency for the four categories of positive emotions was 0.853, while for the four negative emotions it reached a value of 0.895. We can speak of a very high internal consistency in this case, assuming that the variable is divided according to the dual nature of the indicators.

The overall tool was characterised by the following properties resulting from conducting factor analysis (EFA) for the three factors: Kaiser-Meyer-Olkin test=0.757; Bartlett's test $X^2 = 698.663$, $df=66.000$, $p<.001$; Chi-Squared=77.385, $df=33$, $p<.001$; RMSEA=0.128; RMSEA 90% confidence = 0.086 - 0.155; TLI=0.856; BIC=-72.544.

Sociodemographic characteristics

The study sample was characterised by the following properties.

Table 2: Sociodemographic characteristics

Variable	N	%
Gender		
Woman	75	20.21277
Male	19	79.78723
Degree of scientific advancement		
MSc	32	34.04255
Doctor	50	53.19149
Dr habilitated	8	8.51064
Professor	3	3.19149
information withheld	1	1.06383
Metric age		
25-30 years	1	1.06383
31-35 years	7	7.44681
36-40 years	23	24.46809
41-50 years	28	29.78723
51-60 years	27	28.72340
Over 60 years	7	7.44681
Shortcomings	1	1.06383

Results

RQ1: Academic teachers' self-evaluation of digital competence in e-learning

The academic teachers evaluated their own digital competences in the field of e-learning differently. Respondents gave a much higher rating to their general knowledge of conducting remote classes than, for example, specific skills related to operating popular e-learning tools, such as the Moodle platform and MS Teams. A quarter of the academic teacher assessed their skills related to operating the Moodle platform as low or very low. This is probably due to the fact that this platform is a complex environment, requiring in-depth knowledge of creating educational content and conducting classes. Much higher levels of skills are declared in relation to the MS Teams application (the dominant platform for crisis e-learning among the surveyed sample). MS Teams, in contrast to Moodle, is based on an intuitive interface, one that is similar in operation to popular instant messaging services. About 18% of the respondents assessed their own skills related to conducting online consultations as low or very low. A detailed summary of the responses is presented in Table 3.

Table 3: Self-evaluation of digital competence in e-learning (in %)

	general knowledge of the various tools that enable remote teaching	ability to use the university's Moodle e-learning platform	ability to operate the MS Teams application	the efficiency of the on-line consultation (audio-video)
1- very low	5.31915	20.21277	7.44681	5.31915
2	6.38298	7.44681	8.51064	7.44681
3	7.44681	11.70213	12.76596	5.31915
4	18.08511	8.51064	10.63830	11.70213
5	15.95745	7.44681	12.76596	12.76596
6	8.51064	9.57447	9.57447	14.89362
7 - very high	3.19149	-	3.19149	7.44681
Non-response	35.10638	35.10638	35.10638	35.10638

RQ2: Digital competence in crisis e-learning and sociodemographic variables

Gender is not a significant differentiating factor in the self-evaluation of digital competence in e-learning among university teachers. The biggest (statistically significant) difference can be seen in the question of conducting audio-video consultations. Women report being less skilled in this area. However, taking into account the results of the one-way analysis of variance $F(1, 59)=4.1938, p=.04503$ this is not a factor of strong differentiation power. This relationship is illustrated in Figure 5.

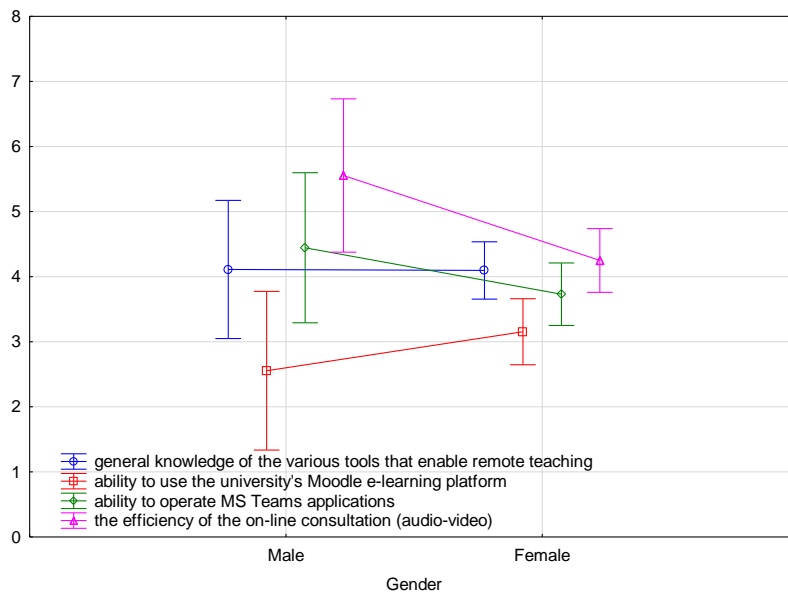


Fig 5. Gender and self-evaluation of digital competence for e-learning

Academic degree or title is closely related to the self-evaluation of digital competence in e-learning. Considering the average values of the indications in particular groups, it can be noticed that professors (the highest degree of scientific advancement) rank their e-learning skills highest in all areas. The other groups are relatively homogeneous in their ratings of their own skills. The difference between the group of professors and the other groups is very noticeable. The average values for each group are presented in Table 4. However, one should be aware that self-evaluation is burdened with many errors resulting from subjective reference to complex processes. It is also clear that there are groups that feel uniquely prepared for crisis e-learning as evidenced by the data collected.

Table 4: Degree of academic promotion and self-evaluation of digital competence in e-learning

Degree	general knowledge of the various tools that enable remote teaching	ability to use the university's Moodle e-learning platform	ability to operate the MS Teams application	the efficiency of the on-line consultation (audio-video)
MSc	4.000000	3.500000	3.700000	4.600000
Doctor	4.075000	2.925000	3.700000	4.300000
Dr habilitated	3.500000	3.000000	3.625000	4.250000
Professor	6.333333	3.666667	6.666667	6.333333

Among the important socio-demographic variables that may influence the assessment of one's own digital competence, metric age was singled out. Self-assessment of a selected part of digital competence was compared to age during the analyses. On the basis of calculations with the use of linear correlation coefficient it turned out that only in one case is this factor significantly related to e-learning. The issue of the co-occurrence of lower skills with age is statistically significant exclusively for online consultations, e.g. using instant messaging. These relationships are illustrated in Figure 6.

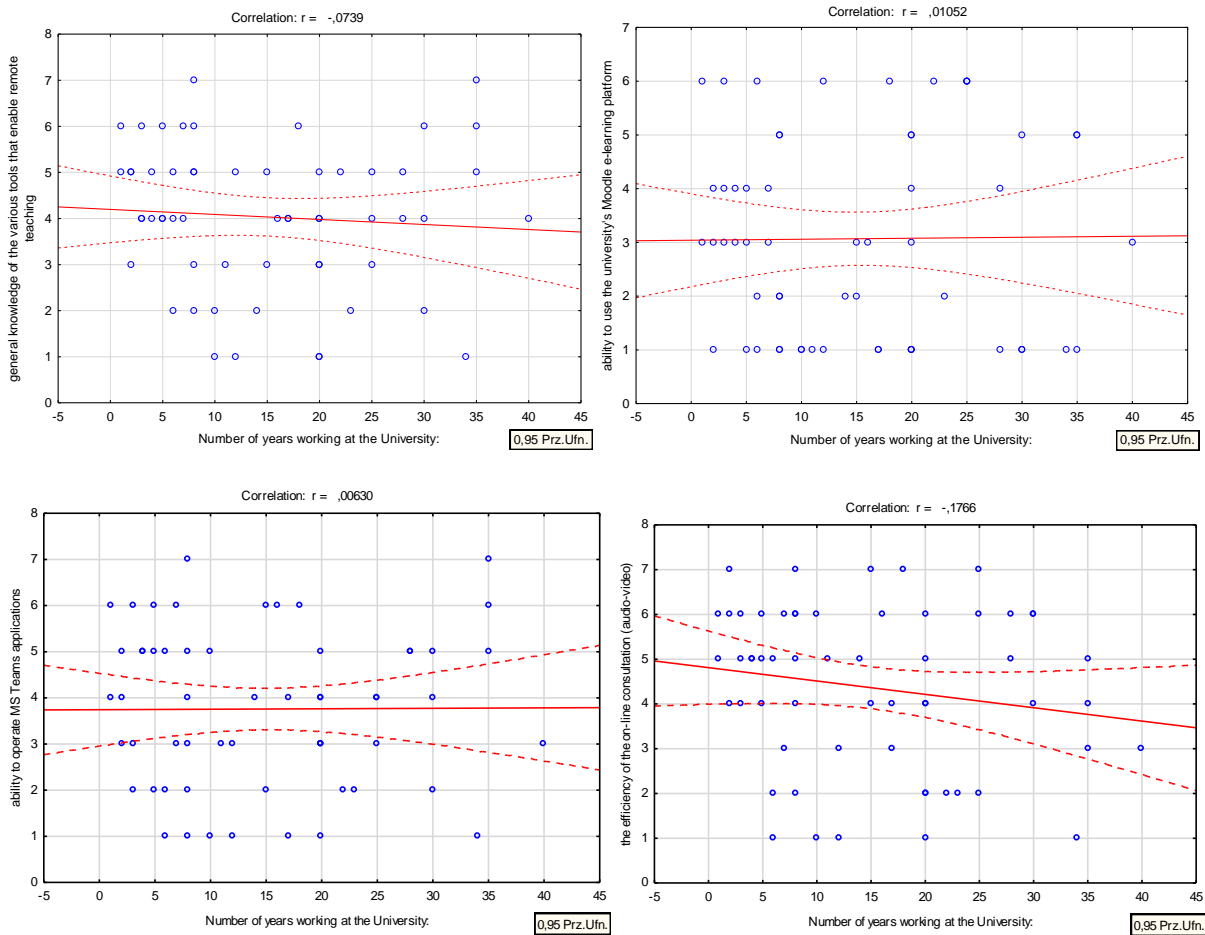


Fig 6. Self-assessment of digital competence in e-learning and metric age

RQ3: Emotions during crisis e-learning

In the vast majority of cases, crisis e-learning was not associated with the occurrence of negative emotions among the academic teachers studied. The overwhelming opinion offered by the respondents was that most often crisis e-learning was perceived positively, including: a sense of usefulness; inspiration; and enabling development. Negative connotations

associated with e-learning appeared very rarely. The degree of occurrence of individual variables along with mean values and standard deviation is presented in Figure 7.

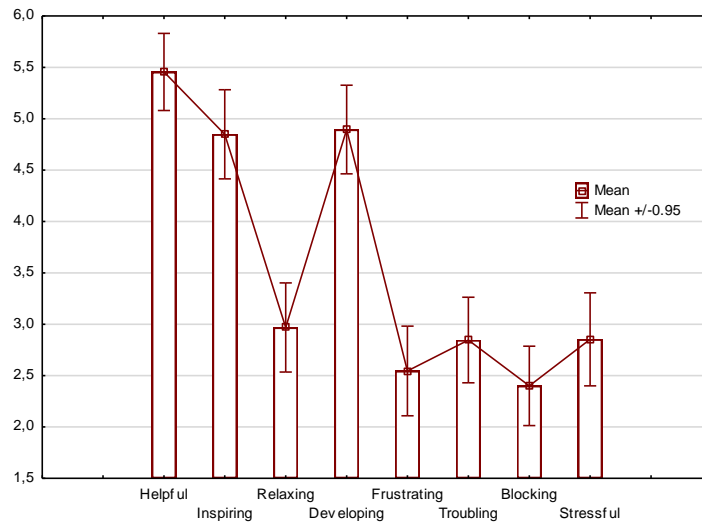


Fig 7. Emotions in crisis e-learning

RQ4: Emotions in crisis e-learning versus groups of academic teachers

The surveyed group of academic teachers is a heterogeneous community. Based on k-means cluster analysis it was noticed that there are three basic groups among the surveyed sample. Group number 1, i.e. the most numerous (57.43%), is characterised by relatively high mean values for the negative values felt when performing tasks resulting from crisis e-learning and also a similar level of positive emotions for this process. Group number 2 (17.02%) has a similar level as group number 1 for positive aspects resulting from crisis e-learning, but highlights much fewer negative emotions associated with crisis e-learning. The last group, number 3 (25.55%), made very clear the occurrence of positive emotions during crisis e-learning and their low share of negative emotions. Thus, it can be said that a quarter of the respondents (group number 3) is characterized by a highly positive emotional attitude to the pandemic-enforced move to distance learning. In contrast, a group of more than half of the teachers experience negative feelings in various states. A detailed breakdown of the cluster analysis is presented in figure number 8.

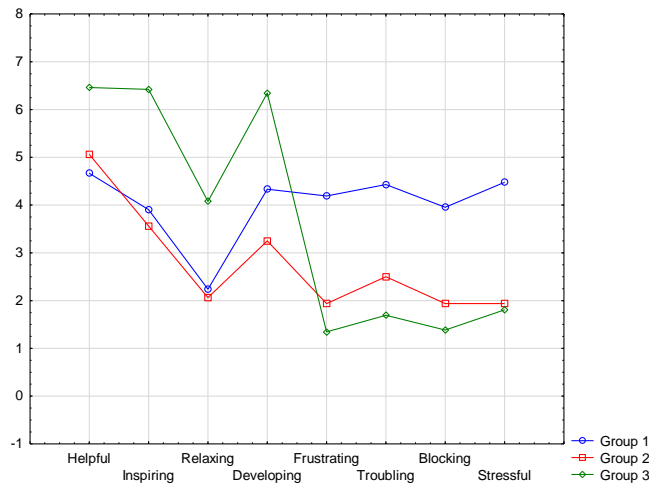


Fig 8. Cluster analysis - emotions and crisis e-learning

RQ5: Self-evaluation of digital competence and emotions during crisis e-learning

Using the linear correlation coefficient, it was noticed that the declarations related to the self-assessment of digital competence do not coincide with the emotions felt during crisis e-learning. Nevertheless, several other interesting relationships emerge from this analysis. Firstly, the declaration of general knowledge about e-learning co-occurs at medium or high level with the declarations related to the use of popular platforms at the university, i.e. MS Teams and Moodle. Secondly, positive feelings about e-learning very often co-occur (medium or high correlation score). Furthermore,

negative feelings associated with crisis e-learning are strongly correlated with each other. The detailed correlations are presented in table number 5.

Table 5: Linear correlations between self-evaluation of digital competence and emotions during crisis e-learning

	1	2	3	4	5	6	7	8	9	10	11
1. General knowledge about e-learning	-										
2. Ability to use the Moodle	0.455**	-									
3. Ability to use Teams	0.734*	0.234**	-								
4. Online consultations	0.578**	0.169	0.682***	-							
5. Helpful	0.123*	0.154	0.135	-0.003	-						
6. Inspiring	0.208**	0.157	0.242	0.107	0.658***	-					
7. Relaxation	0.230*	0.078	0.248	0.108	0.334**	0.562***	-				
8. Developmental	0.256*	0.151	0.175	0.007	0.617 ***	0.836***	0.492***	-			
9. Frustrating	-0.025	0.051	-0.111	0.038	-0.441 ***	-0.491***	-0.323**	-0.364***	-		
10. Troublesome	-0.050	-0.094	-0.102	0.064	-0.488 ***	-0.527***	-0.347**	-0.443***	0.699***	-	
11. Blocking	-0.079	-0.197	-0.135	0.059	-0.504***	-0.505***	-0.206	-0.396**	0.744***	0.718***	-
12. Stresfull	-0.035	0.010	-0.117	0.059	-0.166	-0.263*	-0.249*	-0.214	0.746***	0.687***	0.699***

* p < .05, ** p < .01, *** p < .001

Discussion

The respondents assessed the level at which they had developed their digital skills in a non-uniform way. In relation to the self-assessment components, the lowest skill ratings related to online consultation, and slightly higher skills related to the use of Moodle. The respondents rated their skills the highest in relation to the use of MS Teams. The results obtained indicate a relatively low level of technical skills among academic teachers. Similar results have been reported in studies by a number of researchers who argue about the lower rating of the technological knowledge of academic teachers (Blayone et al., 2018; Castéra et al., 2020; Cubeles et al., 2018). The current results are in line with those previous collected among university professors, who demonstrated the lowest scores in the teaching domains with technology (Cubeles et al., 2018).

Potential links between variables referring to the academic teachers' backgrounds and their digital competence proved not to show any strong correlations. A negligible relationship between gender and self-evaluated digital skills could be seen, and at the same time male academic teachers reported being slightly better conducting audio-video consultations. These results run contrary to the conclusions offered elsewhere that male teachers are more confident at using computers than their female colleagues (Markauskaite, 2006); male teachers report higher digital literacy than female teachers (Koh et al., 2015; Scherer et al., 2017). Similar findings can be found in other research (Castéra et al., 2020).

Regarding the academic degree or title as a background variable a positive correlation was observed between the possession of a higher degree and the reporting of greater digital competence in e-learning. The values obtained could be due to the intrinsic use of technology in the online format as the professors have to design their course and adapt the contents to the online learning environment, and that this process itself improves their technological knowledge (Cubeles et al., 2018). Virtual collaboration increases teachers' opportunities to work with different technologies (Bueno-Alastuey et al., 2018), and develops critical thinking collaboration skills (Schmid & Hegelheimer, 2014). This coincides with other studies that have found that teacher achievement goal orientation is strongly associated with the practices of pedagogical ICT use (Karaseva et al., 2018).

The respondents' age proved to be one more significant factor negatively related to e-learning. Similar results have been confirmed by a number of studies (Castéra et al., 2020; J. H. L. Koh et al., 2010; Lee & Tsai, 2010; Luik et al., 2017).

However, Cubeles (2018) did not find evidence to support the existence in differences in the technological knowledge domains for any age group of academic teachers.

In the case of the third research question of the study mostly positive emotions were found to have been caused by crisis e-learning among the sample of academic teachers during the second wave of Covid-2019. These results stand in contrast to previous findings obtained during the first wave of the Covid-2019 pandemic, when teachers were forced to adapt to teaching using ICT in stressful crisis situations (Brackett & Cipriano, 2020). The teachers then mostly felt the deficiency of their digital competences and struggled with a heavy workload, under time pressures, and with difficulties juggling roles (MacIntyre et al., 2019; Portillo et al., 2020; Coman et al., 2020). Even pre-pandemic, teaching was often listed as one of the most stressful professions (Johnson et al., 2005). Some of the stressors that teachers in general suffer from include pressure inflicted by heavy workloads, time constraints, the lack of a work-life balance, limited autonomy, excessive administrative obligations, strained relationships with colleagues and school leaders, role conflict/ambiguity, managing innovation and change, emotional labor, dread over losing control of the class, fear of evaluation, and low professional self-esteem (Mercer & Gregersen, 2020). The respondents in our study appear to have appreciated the possibility to develop their digital skills during the period of crisis remote teaching, did their best to improve their own digital literacy, and worked to inspire their students in what was a particularly hard period of lockdown and distance learning. The results obtained confirm the proposal put forth by Herman, Reinke, and Eddy (2020) of a “3C Theory of Teacher Stress” that describes three interconnected pathways leading to teacher stress, integrating individual differences in teachers’ (1) coping and (2) competence in executing practices that effectively manage the teaching-learning process, and the systemic (3) context in which teaching occurs, including policies, practices, and administrative support. The proposed categories explain the reason why the attitude of academic teachers towards remote teaching in the second Covid-2019 lockdown changed from negative to positive. The change might reflect a kind of coping strategy which allowed the teachers to adapt to the crisis circumstances and to use this time for professional development. Problem-focused coping is aimed at solving the perceived problem or doing something to alter the source of stress, whereas emotion-focused coping is aimed at reducing or managing the emotional distress that is associated with or triggered by the situation (Lazarus & Folkman, 1984).

Answering the fourth study question led to the construction of three groups of academic teachers based on their emotions during this second period of remote teaching. Each member of this group was characterised as presenting both positive and negative emotions during the period of crisis remote teaching with preferences of positive emotions with differing percentage values. The most numerous group was characterised by equal scores of positive and negative emotions. These results are in line with Flynn and Noonan (2020) who argue that academic teachers’ experience of remote teaching has been restorative, enlightening, and encouraging, part of an ongoing journey in teaching and learning. The sense of resilience generated during the process could be a sign of the adaptation many academic professionals have undergone during the quarantine to cope with stress (Delgado-Gallegos et al., 2021).

Regarding the fifth research question, the academic teachers’ self-evaluation of digital competence and their emotions during the period of crisis remote teaching did not appear to be correlated. At the same time, their declarations regarding their general e-learning knowledge appeared to be linked to the teachers’ positive experiences using popular university platforms (Moodle and MS Teams). The results are logical and in accordance with dozens of previous reports which demonstrate the positive correlations between positive psychological outcomes (well-being, health, happiness, resilience, and growth during trauma) and approach coping with stress and negative links with avoidant coping (MacIntyre et al., 2020).

Conclusions

This study has considered the level of preparedness of academic teachers in the use of remote education solutions during the COVID pandemic, with the specific focus on the second lockdown. The research also presents the teachers’ emotional attitude towards crisis remote teaching.

Academic teachers at the Pedagogical University of Cracow evaluate their own digital competence in conducting e-learning for students at a low technological level. At the same time they gave a much more positive assessment to their skills in using MS Teams, the dominant platform for crisis e-learning among the sample surveyed. The lowest score in the opinions of the respondents referred to their own skills in conducting online consultations.

Importantly, the study demonstrated that links between sociodemographic variables with digital competence are dominantly indirect. The issue of the co-occurrence of lower skills with age is statistically significant only in the case of online consultation.

Our findings indicate that most often crisis remote teaching was perceived in an emotionally positive way during the second lockdown in the pandemic which is something that can be explained by reference to the emergence of coping

strategies during the ongoing pandemic. More than half of the study sample are characterised by equal ratings for both positive and negative emotions.

Finally, the research has shown that teachers' self-assessment of their own digital competence does not coincide with their emotions during the period of crisis remote teaching.

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