Liliana DONATH, PhD
liliana.donath@e-uvt.ro
West University of Timişoara, Romania

Martina HOLENKO DLAB, PhD
mholenko@inf.uniri.hr
University of Rijeka, Croatia

Gabriela MIRCEA, PhD (corresponding author)
gabriela.mircea@e-uvt.ro
West University of Timişoara, Romania

Mihaela MUNTEAN, PhD
mihaela.muntean@e-uvt.ro
West University of Timişoara, Romania

Mihaela NEAMŢU, PhD
mihaela.neamtu@e-uvt.ro
West University of Timişoara, Romania

Tomislav ROZMAN, PhD
tomislav.rozman@e-uvt.ro
Business Information Center Rozman Ltd, Slovenia

Nicoleta SÎRGHI, PhD
nicoleta.sirghi@e-uvt.ro
West University of Timişoara, Romania

Perceptions' Investigation Regarding the Need for Upskilling in Remote Education: A PLS-SEM Analysis

Abstract. *This paper explores the evolving landscape of education, focussing on the challenges posed by the shift to online learning. It investigates the essential skills required by remote educators and trainers, drawing insights from individuals seeking to enhance their virtual teaching abilities. The cost-effectiveness and adaptability of remote education are discussed, along with the crucial role of technology in improving learning outcomes. The paper emphasises the concerns regarding generational skill gaps and the need for educators to transition to online teaching. Critical competencies for remote education, such as critical thinking, collaboration, communication, creativity, and cultural awareness, are highlighted. The study employs Partial Least Squares Structural Equation Modelling (PLS-SEM) for analysis, contributing insights from diverse global perspectives. The paper concludes with implications and recommendations for future research.*

Keywords: *remote education, upskilling, competencies, PLS-SEM.*

JEL Classification: I25, M10, M12, M53, O32.

DOI: 10.24818/18423264/58.3.24.17

1. Introduction

In recent years, the education system has undergone significant changes, presenting new challenges for both educators/trainers and students/trainees. The shift to online education has been particularly impactful, requiring a different approach than traditional methods. Therefore, there have been diligent efforts to identify the new skills that teachers and students need to develop to adapt to the expanded use of online education. Hence, extended research and surveys have been initiated to specifically find what are the newly required competencies for effective learning and teaching.

Since the professional competencies of remote educators in all fields (including economics) contribute to the overall quality of online education and the success of virtual learning environments, there is a great deal of research focused on developing appropriate and effective training for teachers. The need to organise training for teachers to acquire remote teaching skills became particularly evident during the pandemic of the COVID -19 virus. Many teachers find themselves in a situation of emergency remote teaching, lacking the knowledge and skills to incorporate digital technologies into the teaching and learning process. The training provided during the pandemic is likely to have long-term implications for the professional development of remote educators.

Remote education is effective, low-cost, and flexible for diverse learning styles. Nevertheless, specific technologies, platforms, and other remote/digital tools have become instrumental in delivering effective education adapted to particular circumstances of secondary, tertiary, and lifelong education. Although not new in the global education system, digital tools allow flexibility in education but, when interconnected with teaching materials, the learning outcomes are enhanced. Today, e-learning is often used as a synonym for remote learning. Although remote learning is a situation that involves physical separation between students and teachers (educators), e-learning is a broader term that encompasses all forms of learning using electronic devices and digital resources. In our research, we focus on remote education that is supported by information and communication technology.

Although remote education has been widely accepted, it raises concerns about intergenerational the skills gap and the urgent need for most educators to shift from traditional to online teaching and training. Asynchronous learning faces other challenges, such as cultural differences, the speed of acceptability, and digital skills, which have been brought to the forefront by the recent pandemic crisis, despite being long considered the future of education. Among the necessary skills listed for remote education are critical thinking, collaboration, communication, creativity, citizenship (or cultural awareness), and connectivity (or character education).

The aim of the paper is to verify what are the skills that remote educators/trainers need, relying on perceptions of employees interested in upskilling their competencies as virtual educators/trainers following their experience during the pandemic. Since the respondents are related to the economic field, the analysed skills can be extended to a large area of fields, economics education included. Consequently, we tested six hypotheses regarding participation in training, professional competencies, digital competencies, self-management and organisation skills, collaboration competencies, interpersonal, intercultural and communication skills, and specific skills for remote teaching (as remote work).

We used the partial least square structural equation modelling (PLS-SEM) technique to verify our research model. It allowed us to establish the connections between the indicators and their corresponding latent constructs in the measurement model, as well as the connections between the constructs in the structural model. Furthermore, we investigated the predictive relevance of the endogenous latent variables. To conduct the analysis, we used SmartPLS software.

2. Literature Review

The professional competencies of educators for teaching and facilitating learning in online or remote education environments go beyond traditional teaching skills. Al-Naabi, Kelder & Carr (2021) identified three major topics for teacher education based on a literature review: Critical Elements of an Online Classroom, Best Practices in an Online Environment, and Creating Learning Modules. The authors used these topics to develop a model for online and hybrid teacher training with the aim of empowering teachers to develop online courses, model best practices for online learning, and place teachers in the same role as their future students.

Research in the field emphasises the importance of organising training to develop remote teaching skills entirely online or with a blended learning approach to provide flexibility and allow participants to engage in learning activities similar to those they plan for their students. Examples of training indicate that achieving such knowledge and skills is possible. Kmeta & Bjekić (2015) described experiences from the Tempus project NeReLa, which aimed to empower secondary vocational teachers to use modern technologies in remote teaching. During the project, face-to-face and online trainings were organised, and teachers were taught how to incorporate distance learning into their teaching. The evaluation results confirmed the success of the organised training. Teachers recognised many benefits of the training, including the benefits for the development of their professional competencies. Sáiz-Manzanares et al. (2022) reported the results of a satisfaction survey on a blended learning training organised to support teachers in how to use virtual learning environments, including avatars, gamification, and evaluation tools. Participants were content with the training and no significant differences were found between inexperienced and experienced teachers. Evans et al. (2020) used a blended learning model to enhance the use of Blackboard LMS in a continuing education course. By comparing the teachers' activity level in the data log in the LMS before and after participating in the training, a positive effect of professional development on their teaching practice was found. Teachers who participated in the training were more active, and a significant increase in the number and types of tools used during their online teaching was observed, particularly tools that allow students to communicate, interact, and contribute online.

Although examples of teachers' training aimed at developing skills for remote education and exchange of examples of good practice, in most cases no research has been conducted on the impact on teachers' professional skill development, but only the results of the conducted satisfaction survey are reported.

From the perspective of the digitisation process, more and more emphasis is placed on the development of digital skills in the educational process. Although new digital competence technologies have been developed, the changes brought to digital education applied in the educational process are in full development. Digital competencies (DC) are defined by Martin et al. (2006) as "the awareness, attitude, and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, and synthesise digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, to enable constructive social action; and to reflect upon this process. Also, DC is described as the "ability to understand and express through making analytical, productive, and creative use of the information technologies and social software to transform information into knowledge" by Torres-Coronas & Vidal-Blasco (2011). DC is defined by Ferrari et al. (2014) as the use of ICT tools to achieve goals in the learning process. Issues related to digital competence and literacy have been debated at many levels and papers during the past few years.

We are currently witnessing a series of changes resulting from innovation in digital education related to educational platforms and the use of artificial intelligence (AI) in the educational process that requires the development of digital skills. Digital technology is currently causing a qualitative revolution in the educational system. (Oberländer et al., 2020). Adoption of digital technology is essential in the process of adapting the educational system to the needs of the digital economy (Zabolotska et al., 2021). All these definitions highlight that DC is a complex concept that has a very general use in the educational system.

The assumption that skills used in office work can be applied to remote work ('same skills, different environment') is also supported by research (Henke et al., 2022). The same authors researched factors that contribute to successful remote work (albeit not specifically for remote teachers). However, the participants cited setting a 'normal work schedule' as the most beneficial behaviour for successful remote work. We could say that this factor belongs to self-management and organisation, specifically to 'time management' skills. Although Lukashenko (2021) argues that self-management contributes to students in their e-learning endeavours, it can be hypothesised that all remote tasks (such as remote teaching) benefit from self-management. Costantini & Weintraub (2022) found out while surveying 329 remote workers that self-leadership allows higher availability of resources, enabling the proactive initiation of social interactions and improving task significance during remote work. Also, Manasia et al. (2019) suggest that self-management (alongside professional knowledge and practice and professional engagement) could be considered a central dimension of teachers' job readiness.

It is important to integrate the 6Cs of the 21st Century Education into the training programs for remote workers, like educators, managers, or trainers (Karim et al., 2021). The following competencies are considered: critical thinking, collaboration, communication, creativity, citizenship (or cultural awareness), and connectivity (or character education). According to Martin & Bradbeer (2016), trainers should use different pedagogies to meet the needs of all learners and to create a collaborative, supportive learning environment. Collaboration in remote work environments implies synchronous and asynchronous interactions and tasks to achieve common goals. According to Wiliam & Leahy (2015), peer collaboration leads to more successful learning in the classroom, and therefore the competencies of educators in this direction must be upskilled. Regardless of whether one refers to a remote trainer or educator, one must encourage internal collaboration within the group/team one works with. One's ability to work together with the group requires certain professional skills (collaboration included) (Hadi et al., 2023). Efficient collaboration implies interpersonal trust and objectivity toward peers' opinions (Kulic & Jancovik, 2022). Based on the above, it can be concluded that when remote work-related professional skills are analysed, collaboration capabilities (CC) are also considered.

Remote teaching and learning pedagogies require a set of skills that transcend the professional ones. Tusyanah et al. (2023) draw attention to the role of online collaborative learning, which once implemented in class might improve interpersonal communication and cognitive performance. Borge et al. (2022) discuss the necessity of multicultural collaborative skills based on joint ideas and understanding-building, as well as collective knowledge and collaboration that can also support remote education. Improving remote educators' capabilities relies, among others, on interpersonal, intercultural, and communication skills. Liubarets et al. (2022) consider that creative thinking and independent interpersonal as well as intercultural communication skills are essential for economists who work in the digital space. Over the last decades, business professionals have frequently been asked to accommodate a culturally diversified environment in a globalised market, being challenged to acquire intercultural skills. Hence, economic and business education started to include intercultural skills in their curricula. Such an experience cannot go amiss in digital and remote education, given the global ecosystem provided by the Internet. Schartel-Dunn & Lane (2019) stress the importance of communication skills (including writing and grammar, teamwork, reporting, horizontal and hierarchical interpersonal skills, etc.) for business students which arguably, presently, extends to using remote education. Miller &Tucker (2015) addressing the issue of critical thinking in intercultural contexts in distance learning bring forward the necessity to foster these skills, equipping students with the ability to learn in an asynchronous environment. Authors (Gayathridevi & Deepa, 2015) also discuss the effectiveness of business communication skills, showing that most higher education institutions around the world are constantly preoccupied with improving their students' communication skills, which have been proven successful and that undoubtedly can be translated into remote learning. The migration of economic courses online, stresses the need to improve communication skills that can be enhanced by relating to best practices in online negotiations as stated by (Pauletto, 2023). Technical know-how, pedagogical skills, and adaptability are all necessary for effective remote teaching. The interaction between educators' professional competencies and their specialised skills in the context of remote instruction is interesting to study. Emergency distance learning had both advantages and disadvantages compared to face-to-face instruction. The participants' opinions on the level of technology proficiency they should possess for their employment are changing, as evidenced by the digitalisation of the educational environment brought about by distant learning. Consequently, the 21st century skills of the participants are not significantly affected by distance education. However, the value and necessity of twenty-first-century abilities in the online education process become clearer (Bozgun et al., 2023). It is important to develop a set of pedagogical principles, to gather to discuss best practices and to encourage and support action research among videoconference teachers (Rehn et al., 2018).

3. Methodology and Analysis

3.1 Research Hypotheses and Conceptual Model

Remote teachers, beyond the similar qualifications as in-classroom teachers, need supplementary skills in the online environment. It is important to understand the specificity of remote teaching, to plan and adapt the learning materials accordingly, and to manage efficiently the process of remote learning (Henke, Jones & O'Neill, 2022). Therefore, it is necessary to continuously train remote educators along with the developments and evolutions in the digital economy.

Based on the literature review (Table 1), we formulated six hypotheses and proposed a research model that contains the following constructs (Figure 1): participation in training, professional competencies, digital competencies, self-management and organisation skills, collaboration competencies, interpersonal, intercultural and communication skills, and specific skills for remote teaching.

There is a continuous research interest in the development of professional competencies for remote work (Table 1), and various aspects of the problem are addressed. Both educators and trainers need an integrated package of skills in the online environment to carry out their activities. As such, their participation in specialised training is required.

Table 1. Hypotheses and literature references

Hypotheses	References
H1	Kmeta & Bjekić (2015); Evans et al. (2020); Naabi, Kelder & Carr (2021); Sáiz-Manzanares et al. (2022);
H2	Martin et al. (2006); Torres-Coronas & Vidal-Blasco (2011); Ferrari et al. (2014); Oberländer et al. (2020); Zabolotska et al (2021).
H3	Manasia et al. (2019); Lukashenko (2021); Henke et al. (2022); Costantini & Weintraub (2022);
H4	Wiliam & Leahy (2015); Martin & Bradbeer (2016); Kulic & Jancovik (2022); Hadi et al. (2023).

Hypotheses	References
H5	Miller & Tucker (2015); Gayathridevi & Deepa (2015); Schartel-Dunn & Lane (2019); Borge et al. (2022); Liubarets et al. (2022); Tusyanah et al. (2023); Pauleto (2023);
H6	Rehn et al. (2018); Bozgun et al. (2023);

Source: Authors' analysis.

In our approach, we brought together different skills and abilities, establishing a portfolio of professional competencies for remote teachers. With these considerations, the constructs were substantiated, the hypotheses were formulated, and the research model in Figure 1 was proposed.

(1) H1. **Participation in training** (PT) to acquire remote work skills and best practices has a significant positive influence on the **professional competencies** (PC) of remote educators.
(2) H2. Remote educators with high professional competencies are more likely to have high **digital competencies** (DC).
(3) H3. Remote educators with high professional competencies are more likely to have **high self-management and organisational skills** (SMOS).
(4) H4. Remote educators with high professional competencies are more likely to have high **collaboration competencies** (CC).
(5) H5. Remote educators with high professional competencies are more likely to have high **interpersonal, intercultural, and communication skills** (IICS).
(6) H6. Remote educators with high professional competencies are more likely to have high **specific skills** for remote teaching (SS).

To test the hypotheses, we use the quantitative research method. Hence, a questionnaire was launched that covers all the considered research dimensions. The questionnaire was disseminated online from April 1[7th] to June 20[th] 2023 and all the indicators were measured on a five-point Likert scale, from 1 (strongly disagree) to 5 (strongly agree).

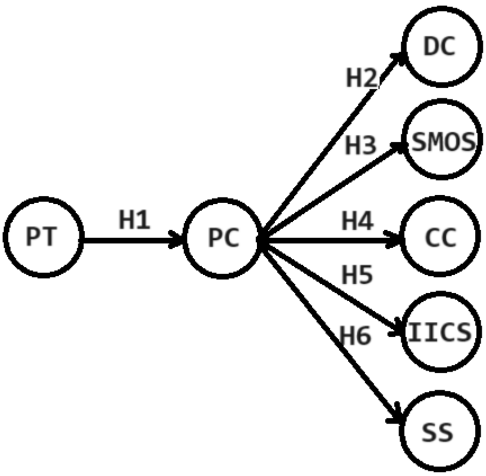

Figure 1. The research model
Source: Authors' proposal.

Our target group consisted of employees interested in upskilling their competencies as virtual educators/trainers. 288 valid answers were collected (Table 2). Several European countries and a variety of industry/business sectors are covered. 46.53% of the respondents are remote workers, 36.46% are remote educators, and 17.01% are remote managers. They belong to different active age groups.

Table 2. Respondents' information

Characteristic	Category	Frequency	%
Gender	Female	173	60.07%
	Male	111	38.54%
	NA	4	1.39%
Age	< 25 years	50	17.36%
	25 - 35 years	66	22.92%
	35 - 45 years	82	28.47%
	> 45 years	90	31.25%
Country	Romania	178	61.81%
	Slovenia	9	3.13%
	Austria	7	2.43%
	Croatia	86	29.86%
	Other UE countries	6	2.08%
	Non-UE countries	2	0.69%
Industry sector	Banking	3	1.04%
	Consulting	27	9.38%
	Creative services	9	3.13%
	Digital Marketing	1	0.35%
	Financial services, Accounting	20	6.94%
	Higher education	102	35.42%
	Informal education	6	2.08%
	IT	44	15.28%
	Primary and Secondary education	23	7.99%
	Public administration	4	1.39%
	Research	14	4.86%
	Translating, proofreading	2	0.69%
	Other	33	11.46%
Remote work	Remote educator	105	36.46%
	Remote manager	49	17.01%
	Remote worker	134	46.53%
Organisation size	<10 employees	29	10.07%
	10-50 employees	64	22.22%
	50-100 employees	20	6.94%
	>100 employees	175	60.76%

Source: Authors' analysis.

3.2 Analysis and Results

For the analysis, we applied the partial least squares structural equation modelling (PLS-SEM) method to validate the research model (Figure 2).

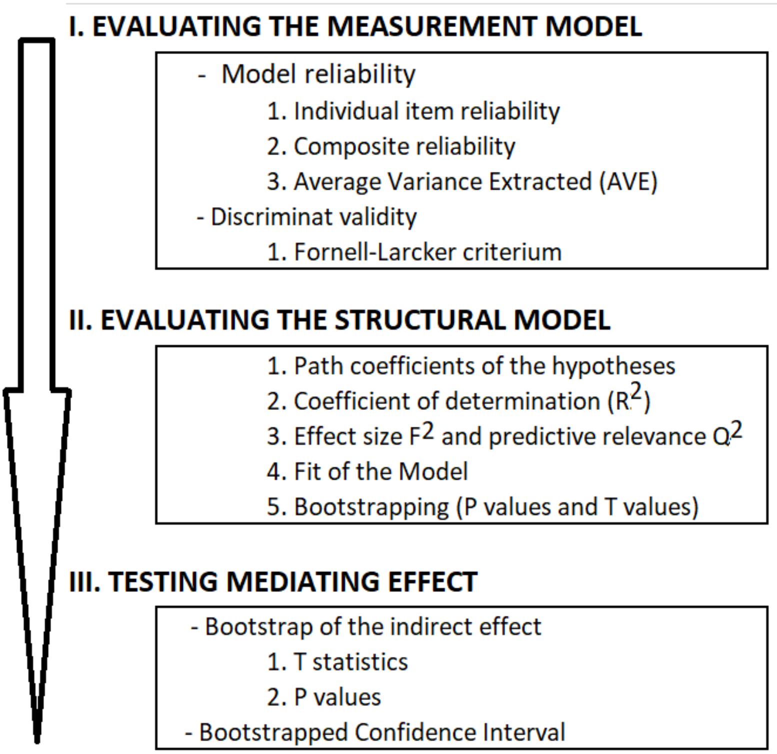

Figure 2. PLS-SEM steps
Source: adapted from Fehan & Aigbogun, 2020.

We determined the correlation of the indicators and their corresponding latent constructs in the measurement model and the relationships between the constructs in the structural model. We also analysed whether there is a predictive relevance of the endogenous latent variables SmartPLS software was used to perform the analysis.

3.2.1 Evaluating the Measurement Model

- Model reliability

The items' reliability can be determined from the outer loadings, and the values need to be above 0.70 for confirmatory research (Henseler, 2018). All items have outer loading values greater than 0.70, which means that they have a substantial contribution to their assigned constructs (Table 3).

Table 3. Outer loadings

	CC			DC			IICS			PT			SMOS			SS
CC1	0.855		**DC1**	0.732		**IICS1**	0.841		**PT1**	0.737		**SMOS1**	0.773		**SS1**	0.877
CC2	0.882		**DC2**	0.782		**IICS2**	0.845		**PT2**	0.818		**SMOS2**	0.788		**SS2**	0.868
CC3	0.885		**DC3**	0.717		**IICS3**	0.878		**PT3**	0.792		**SMOS3**	0.778		**SS3**	0.886
CC4	0.868		**DC4**	0.774		**IICS4**	0.897		**PT4**	0.835		**SMOS4**	0.778		**SS4**	0.902
CC5	0.814		**DC5**	0.718		**IICS5**	0.857		**PT5**	0.83		**SMOS5**	0.811		**SS5**	0.881
									PT6	0.662		**SMOS6**	0.748		**SS6**	0.873
	PC											**SMOS7**	0.821		**SS7**	0.854
PC	1											**SMOS8**	0.799		**SS8**	0.876

Source: Authors' analysis with SmartPLS software.

Internal consistency reliability is the extent to which indicators measuring the same construct are associated with each other (Table 4). The recommended values for rho_c and rho_a are greater than 0.70. Cronbach's alpha coefficient is associated with reliability or internal consistency. The coefficient value is normally seen as ≥0.70 (five instances) or >0.70 (three instances). AVE indicator values show, on average, how much variation in the associated items can be explained by the construct. Values greater than 0.50 are recommended.

Table 4. Composite reliability and AVE values

Construct	Composite reliability (rho_c)	Composite reliability (rho_a)	Cronbach's alpha	Average variance extracted (AVE)
CC	0.935	0.915	0.913	0.742
DC	0.862	0.816	0.804	0.555
IICS	0.936	0.917	0.915	0.746
PT	0.903	0.884	0.871	0.611
SMOS	0.929	0.917	0.912	0.620
SS	0.964	0.963	0.957	0.769

Source: Authors' analysis with SmartPLS software.

- Discriminant validity

Discriminant validity assumes that "should correlate higher among them than they correlate with other items from other constructs that are theoretically supposed not to correlate" (Henseler, 2018). Discriminant validity can be established using the Fornell-Larcker criterion (Table 5).

Table 5. Fornell-Larcker criterium

	CC	DC	IICS	PC	PT	SMOS	SS
CC	0.861						
DC	0.645	0.745					
IICS	0.621	0.604	0.864				
PC	0.235	0.217	0.251	1			
PT	0.632	0.608	0.697	0.314	0.781		
SMOS	0.767	0.794	0.64	0.239	0.669	0.787	
SS	0.666	0.659	0.649	0.23	0.701	0.679	0.877

Source: Authors' analysis with SmartPLS software.

3.2.2 Evaluating the Structural Model

- Path coefficients of the hypotheses

The path coefficients show the connectivity between the two constructs. All path coefficients are greater than 0.1 meaning that all relationships between the latent variables are statistically significant (Figure 3).

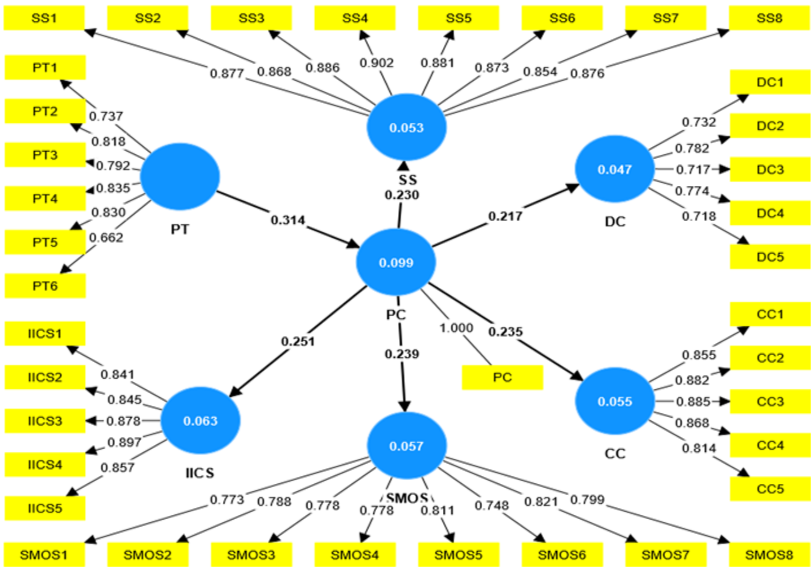

Figure 3. PLS-SEM Analyse

Source: Authors' analysis with SmartPLS software.

- Coefficient of determination (R^2)

From the model diagram (see Figure 3), the overall R^2 is found to be weak. According to Henseler (2018), acceptable R^2 values are based on the research context, and "in some disciplines, an R^2 value as low as 0.10 is considered satisfactory". As mentioned in Ozili (2023), such small values of R^2 "are acceptable on the condition that some or most of the predictors or explanatory variables are statistically significant" (Figure 3).

- Effect size F2 and predictive relevance Q2

Applying Cohen's f^2 method of effect size, we obtained the following values for F^2 that indicate a small effect size (Table 6). Construct PC has a small impact on the other constructs (DC, SMOS, CC, IICS, SS), while PT has a medium impact on PC. Q^2 represents the predictive relevance and shows whether the model has or does not have predictive relevance. Our Q^2 values are above zero, indicating that the model has predictive relevance.

Table 6. Effect size F^2 and Q^2 values

	Path coeficients	F^2		Q^2
PT -> PC	0.314	0.11	**PC**	0.085
PC -> DC	0.217	0.049	**DC**	0.078
PC -> SMOS	0.239	0.061	**SMOS**	0.094
PC -> CC	0.235	0.059	**CC**	0.087
PC -> IICS	0.251	0.067	**IICS**	0.103
PC -> SS	0.23	0.056	**SS**	0.096

Source: Authors' analysis with SmartPLS software.

- Fit of the Model in SmartPLS

We are using the standardized Root Mean Square Residual (SRMR) that is calculated in SmartPLS. According to Henseler et al. (2018), SRMR is a goodness-of-fit measure for PLS-SEM and values less than 0.10 are considered a good fit. We obtained a value of 0.054 for the saturated structural model.

- Bootstrapping

According to Henseler (2018), "From a statistical explanatory modelling point of view, hypothesis testing is a critical element in developing relevant and rigorous theory. In a PLS-SEM context, hypothesis testing relies on bootstrapping". The recommendations refer to using P values and the bootstrap confidence interval. If $P \leq 0.05$, the hypothesis is accepted, otherwise it is rejected. Alternatively, the T statistic can be used, and values greater than 2.00 are statistically significant (Table 7).

Table 7. Validation of the hypotheses

	T statistics	P values	Remark
PT -> PC	5.348	0.000	H1 is supported
PC -> DC	3.659	0.000	H2 is supported
PC -> SMOS	3.823	0.000	H3 is supported
PC -> CC	3.905	0.000	H4 is supported
PC -> IICS	4.39	0.000	H5 is supported
PC -> SS	3.727	0.000	H6 is supported

Source: Authors' analysis with SmartPLS software.

3.2.3 Testing mediating effect

- Bootstrap of the indirect effect

We continued our investigation by testing mediation via indirect effects in PLS-SEM. PC has a mediating role in transmitting the effect from PT to the dependent constructs (hypotheses H2'- H6').

(1) H2'. Participation in training (PT) indirectly influences high digital competencies (DC).

(2) H3’. Participation in training (PT) indirectly influences high self-management and organising skills (SMOS).
(3) H4’. Participation in training (PT) indirectly influences high collaboration competencies (CC).
(4) H5’. Participation in training (PT) indirectly influences high interpersonal, intercultural, and communication skills (IICS).
(5) H6’. Participation in training (PT) indirectly influences highly specific skills for remote teaching (SS).

P values (Table 8) and confidence interval (Table 9) are determined. P values remain less than 0.05 and T statistic over 2.00.

Table 8. P values and T statistics

	P values	T statistics	Remark
H2’: PT -> PC -> DC	0.02	2.313	H2’ is supported
H3’: PT -> PC -> SMOS	0.021	2.394	H3’ is supported
H4’: PT -> PC -> CC	0.017	2.394	H4’ is supported
H5’: PT -> PC -> IICS	0.013	2.477	H5’ is supported
H6’: PT -> PC -> SS	0.022	2.294	H6’ is supported

Source: Authors' analysis with SmartPLS software.

- Bootstrapped confidence interval

The confidence interval measures how well the sample data represents the studied population. Using bootstrapping in SmartPLS we have determined the 95% confidence interval with the lower (2.50%) and upper limit (97.50%) listed in Table 9. The hypotheses can be tested in PL-SEM with P values, but also with confidence intervals. According to Henseler (2018), if the value 0 (zero) does not fall within this interval, the hypothesis is accepted; otherwise it is rejected.

Table 9. Confidence interval

	Original sample (O)	Sample mean (M)	2.50%	97.50%
PT -> PC -> SMOS	0.075	0.082	0.029	0.153
PT -> PC -> CC	0.074	0.079	0.028	0.146
PT -> PC -> SS	0.072	0.078	0.025	0.147
PT -> PC -> DC	0.068	0.076	0.028	0.14
PT -> PC -> IICS	0.079	0.084	0.031	0.152

Source: Authors' analysis with SmartPLS software.

After studying the relevant literature and best practices of remote work from various institutions, we have identified the main necessary skills for remote educators. These skills include digital competencies, self-management and organisation skills, collaboration competencies, interpersonal, intercultural and communication skills, and specific skills for remote teaching.

All these skills have been integrated under the paramount term of professional competencies, and their improvement can be achieved after participating in an upskilling training programme.

4. Conclusions and further research

The research highlights the essential need for upskilling and continuous training for remote educators in the evolving digital landscape. The study established a robust research model with strong reliability, validity, and predictive relevance. Professional competencies were found to play a vital mediating role, influencing various critical skills for remote teaching and management. The model demonstrated a good fit and strong statistical significance in its relationships. This research shows the importance of investing in training and upskilling programmes to enhance the competencies necessary for remote work, ultimately fostering success in the online environment. Further research is required regarding the effectiveness of the identified skills.

Acknowledgements: *The article was made within Project No: 2022-1-RO01-KA220-HED-000086331, Upskilling and Certification Scheme for virtual educators - Virtual EDU.*

References

[1] Al-Naabi, I., Kelder, J.A., Carr, A. (2021), *Preparing teachers for emergency remote teaching: A professional development framework for teachers in higher education. Journal of University Teaching & Learning Practice*, 18(5), 4.

[2] Borge, M., Soto, J.A., Aldemir, T., Mena, J.A. (2022), *Building Multicultural Competence by Fostering Collaborative Skills. Teaching of Psychology*, 49(1).

[3] Bozgun, K., Ozaskin-Arslan, A.G., Ulucinar-Sagir, S. (2023), *COVID-19 and Distance Education: Evaluation in the Context of Twenty-first Century Skills. Asia-Pacific Edu Res,* 32, 417-428.

[4] Costantini, A., Weintraub, J. (2022), *The Benefits of Being Proactive While Working Remotely: Leveraging Self-Leadership and Job Crafting to Achieve Higher Work Engagement and Task Significance. Frontiers in Psychology*, 13, https://doi.org/10.3389/fpsyg.2022.833776.

[5] Evans, J.C., Yip, H., Chan, K., Armatas, C., Tse, A. (2020), *Blended learning in higher education: professional development in a Hong Kong university. Higher Education Research & Development*, 39(4).

[6] Fehan, H., Aigbogun, O. (2020), *Influence of Internal Organizational Factors and Institutional Pressures on Construction Firms' Performance, Construction in Economics and Buildings*, DOI: 10.5130/AJCEB.v21i2.7593.

[7] Ferrari, A., Brecko, B.N., Punie, Y. (2014), *DIGCOMP: A framework for developing and understanding digital competence in Europe. Elearning Papers*, (38), 1-15. www.openeducationeuropa.eu/en/elearning_papers.

[8] Gayathridevi, S.K., Deepa, R. (2015), *Effectiveness of a Business Communication Course: Evidence from a Business School in India. Business and Professional Communication Quarterly,* 78(1), 94-103.

[9] Hadi, S., Wahyuningtyas, N., Rachmawati, A.P., Tang, L.L., Mentariningtyas, G. (2023), *Innovation and Collaboration in Organizations: A Bibliometric Research. International Journal of Economics and management review (IJEMR),* 1(1), 28-38.

[10] Henke, J.B., Jones, S.K., O'Neill, T.A. (2022), *Skills and abilities to thrive in remote work: What have we learned. Frontiers in Psychology*, 13.

[11] Henseler, J. (2018), *Partial least squares path modeling: Quo Vadis? Quality and Quantity*, [e-journal] 52(1), 1-8. https://doi.org/10.1007/s11135-018-0689-6.

[12] Karim, E., Safran, A.A., Shuib, N.H., Azmi, A. (2021), *Level of 6Cs Global Competencies among Trainee Teachers upon the Implementation of Pedagogical Capacity for Deep Learning based on Rasch Measurement. International Research Journal of Education and Sciences (IRJES)*, 5(2), e-ISSN: 2550-2158.

[13] Kmeta, R., Bjekić, M. (2015), *Training secondary vocational school teachers for the use of remote experiments: NeReLa project case study*. In *2015 3rd Experiment International Conference* (exp. at'15) (249-254). IEEE.

[14] Kulic, D., Jancovic, A. (2022), *Teachers' perspective on emergency remote teaching during COVID-19 at tertiary level. Information Technologies and Learning Tools*, 88(3), 78-89, DOI: 10.33407/itlt.v89i3.4758.

[15] Liubarets, V., Bakhmat, N., Kurylo, L., Spitsyna, A., Biriukova, O. (2022), *Formation of Transversal Competencies of Future Economists in the Conditions of Digital Space. Journal of Higher Education Theory and Practice*, 22(14), 67-80.

[16] Lukashenko, M.A. (2021), *Self-Management Skills as a Basis for the Effectiveness of e-Learning. Vysshee Obrazovanie v Rossii - Higher Education in Russia*, 30(2), Article 2, https://doi.org/10.31992/0869-3617-2021-30-2-61-70.

[17] Manasia, L., Ianos, M.G, Chicioreanu, T. (2019), *Pre-Service Teacher Preparedness for Fostering Education for Sustainable Development: An Empirical Analysis of Central Dimensions of Teaching Readiness. Sustainability*, https://doi.org/10.3390/su12010166.

[18] Martin, S., Bradbeer, C. (2016), *Creating collaborative effectiveness: One school approach. SET: Research Information for Teachers, New Zealand Council for Educational Research*, (2), 5.

[19] Martin, A. Grudziecki, J. (2006), *DigEuLit: Concepts and tools for digital literacy development. Innovation in Teaching and Learning in Information and Computer Sciences*, 5(4), https://doi.org/10.11120/ital.2006.05040249.

[20] Miller, J.W., Tucker, J.S. (2015), *Addressing and assessing critical thinking in intercultural contexts: Investigating the distance learning outcomes of military leaders. International Journal of Intercultural Relations*. https://www.semanticscholar.org/paper/Addressing-and-assessing-critical-thinking-in-the-Miller-Tucker/57b93c911a6d57a3808f374a0213d54e3cd35cbe.

[21] Oberländer, M., Beinicke, A., Bipp, T. (2020), *Digital competencies: A review of the literature and applications in the workplace. Computers & Education*, 146, 103752.

[22] Ozili, P.K. (2023), *The Acceptable R-Square in Empirical Modelling for Social Science Research, Social Research Methodology and Publishing Results: A Guide to Non-Native English Speakers*, DOI: 10.4018/978-1-6684-6859-3.ch009, ICI-Global.

[23] Pauletto, C. (2023), *Online Teaching in HEIs vs. Online International Negotiation: Analogies and Transferable Good Practices*. In *Moving Higher Education Beyond Covid-19: Innovative and Technology-Enhanced Approaches to Teaching and Learning* (Emerald Studies in Higher Education, Innovation and Technology), Emerald Publishing Limited, Bingley, 29-51.

[24] Rehn, N., Maor, D., McConney, A. (2018), *The specific skills required of teachers who deliver K–12 distance education courses by synchronous videoconference: Implications for training and professional development. Technology. Pedagogy and Education*, 27(4), 417-429.

[25] Sáiz-Manzanares, M.C., Almeida, L.S., Martín-Antón, L.J., Carbonero, M.A., Valdivieso-Burón, J.A. (2022), *Teacher training effectiveness in self-regulation in virtual environments. Frontiers in Psychology*, 13, 776806.

[26] Schartel-Dunn, S.G., Lane, P.L. (2019), *Do Interns Know What They Think They Know? Assessing Business Communication Skills in Interns and Recent Graduates. Business and Professional Communication Quarterly*, 82(2), 202–213, http://10.1177/2329490619826258.

[27] Torres-Coronas, T., Vidal-Blasco, M.A. (2011), *Adapting a face-to-face competence framework for digital competence assessment. International Journal of Information and Communication Technology Education (IJICTE),* 7(1), 60-69.

[28] Tusyanah, T., Ismiyati, I., Suryanto, E., Sakitri, W., Indira, F.R. (2023), *The Role of Online Collaborative Learning (OCL) in Interpersonal Communication and Cognitive Performance. International Journal of Sociology of Education* 12(1). http://dx.doi.org/10.17583/rise.10800.

[29] Wiliam, D., Leahy, S. (2015), *Embedding formative assessment: Practical techniques for K-12 classrooms. Learning Sciences International*, ISBN 10: 1941112293/ISBN 13: 9781941112298.

[30] Zabolotska, O., Zhyliak, N., Hevchuk, N., Petrenko, N., Alieko, O. (2021), *Digital competencies of teachers in the transformation of the educational environment. Journal of Optimization in Industrial Engineering*, Special issue 2021, 25-32.