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## Article

# Determinants of work engagement among teachers in the context of teleworking

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**DETERMINANTS OF WORK ENGAGEMENT AMONG TEACHERS  
IN THE CONTEXT OF TELEWORKING**

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**Abstract**

In Romania, the COVID-19 pandemic has interfered with education, besides other areas, since March 2020. Schools and universities shifted from classroom to online teaching, and the education system needed to adapt to the new form of organization.

The paper provides a study on how teachers from Romania dealt with professional challenges, as part of a changing education system. The research aimed to analyse the impact of professional changes on teaching in Romania, between March and June 2020 and to identify the main predictors of work engagement, in the context of teleworking.

The research was performed on a sample of 400 teachers from Romania, representative for the entire population of teachers from all Romanian forms of education, with a confidence interval of 5% and a confidence level of 95%. We collected data based on scales and indicators that were validated for the Romanian context and proposed a factorial model, tested subsequently with confirmatory factorial analysis (CFA) and structural equation modelling (SEM).

The results show that perceived student engagement and motivation are major determinants of work engagement in teaching.

**Keywords:** work engagement, teleworking, online learning, factorial analysis, structural equation modelling

**JEL Classification:** C38, I20

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## **Introduction**

The COVID-19 pandemic has caused a paradigm shift in education all over the world. The requirements of teleworking have become an urgent matter, especially in countries that needed to update their technological infrastructure. The Romanian education system had to find solutions to provide education to poor social environments, with no modern communication means.

Distance education is a particular form of teleworking, given the large number of participants that are directly and simultaneously engaged in teaching and learning.

Considering the two parties involved in education, teachers had to meet most requirements: to adapt the subject matter to online teaching and get familiar at short notice with new technologies, required by teleworking.

The difficult social context, marked by limited social interactions and the psychological pressure of being infected with the new coronavirus, overlapped with new professional requirements.

In our study, we aimed to examine the influence of these requirements on the professional activity of teachers from Romania and to highlight the factors that generated and modelled work engagement in teaching during the first three months of teleworking, i.e. March to June 2020.

It is hard to say when the pandemic will end. We don't know for how long e-learning will prevail over, or on what term it will alternate with classroom teaching and learning. Therefore, analysing the determinants of its effectiveness is important.

The aim of the paper is to provide a perspective over the factors that explain the work engagement of teachers from Romania, in the context of the teleworking requirements called forth by the COVID-19 pandemic.

The paper contributes to the understanding of mechanisms that enhance and mechanisms that downshift the work engagement of Romanian teachers, and identifies the most important predictor of engagement in teleworking. The perceived quality of student engagement in education becomes a predictor of educator engagement and is reflected by the latter.

From a practical perspective, our diagnosis provides coordinates for possible interventions, meant to increase the work engagement and dedication of teachers, as these are mandatory to the sustainability of the Romanian education system.

The paper is structured in four sections. The first one presents the current knowledge on the main concepts that were approached in the study. The second section describes the research methodology. The third part focuses on the analysis of data provided by the empirical research. The final section concludes and summarizes the main contributions of the study.

## **1. Literature review**

### **1.1. Work engagement of teachers**

Work engagement is a feature of the relation between employees and their work, that comes from the intrinsic nature of the job (Maslach et al., 2001) and stands for one's investment in the own work. Work engagement requires energy devoted to work, as well as identification

with one's job. The concept was defined in literature as a three-dimensional theoretical construct, with a cognitive, an emotional and a behavioural side (Fredricks et al., 2004, Kirkpatrick, 2007).

From a different perspective, work engagement was defined based on three components: vigour, dedication and absorption (Schaufeli et al., 2006; Schaufeli and Bakker, 2010). These dimensions or components, as given by various definitions, are in fact connected with each other: vigour is linked to the cognitive dimension; it means resilience to overcome possible restraints or difficulties while practising a profession. Dedication is an emotional component, related to the importance that one attaches to the own work and is correlated with enthusiasm, while absorption implies spending a long time in working activities, in terms of physical presence and involvement (Rayton and Yalabik, 2014). As an energetic state, work engagement was seen as the opposite of burnout (Maslach et al., 1997).

As to employees in the education sector, the cognitive dimension refers to their interest in teaching and their dedication. The emotional component of work engagement among educators is given by how much they enjoy teaching, their enthusiasm (Kirkpatrick, 2007) and their connection with students (Fredricks et al., 2004). The behavioural dimension relates to how teachers participate in teaching and preparation activities, their effort measured in working hours etc.

Further studies on the work engagement of teachers generated some more results. A supportive work environment enhances work engagement (Minghui et al., 2018). Good teaching results (reaching educational goals, good results and high academic achievement on the part of students) are positively associated with work engagement in teaching (Hultell and Gustavsson, 2011). Other studies explain work engagement in relation with certain personality indicators (Langelaan et al., 2006), tangible and intangible organisational resources (Hakanen et al., 2007), organisational performance (San and Tok, 2017), emotions and affects (Stanley and Burrows, 2005; Obrad, 2020).

Hultell and Gustavsson (2011) identify factors that are negatively associated with work engagement. The most important ones are tasks with unmet expectations, that require the use of unfamiliar methods and instruments, a large number of job demands in a short time, social isolation.

Teaching and learning engagement on the part of teachers and students have been mostly approached separate from each other. However, there are several studies showing that a high work engagement on the part of teachers increases the probability that student engagement will also be high (Chen et al., 2013; Shernoff, 2013). There are even less contributions in literature regarding the perspective of teachers on the correlation described above. Hence, we intend to answer following research question: how important is the perceived student engagement in learning to their teachers and to what extent is this representation associated with a certain work engagement of teachers?

In our study, we measured the work engagement of teachers by means of OWEE – Online Work Engagement in Education (Obrad, 2020) – a scale that was built and validated for the educational environment from Romania.

### **1.2. Social and professional contextual factors**

The professional contextual factors refer those professional requirements of teaching, that were called forth by social changes. With the shift from direct teaching to teleworking, teachers from Romania faced occupational stress, more effort and overtime, and devoted considerable energy to their work. Kyriacou (2011) refers to education when he defines stressors as emotional reactions of teachers to professional demands.

Several studies find that professional contexts in which work requirements and leisure time are disproportionate produce occupational stress (De Carlo et al., 2019; de Sousa et al., 2019).

Research on employees from different forms of education points to factors with a negative effect on work engagement: lacking or poor resources (Ravalier and Walsh, 2018), students' lack of motivation and engagement (Shen et al., 2015), no support from management and colleagues (Zurlo, 2007), no match between professional expectations and the reward system (Salah, 2016), events or changes that are not properly dealt with by management (Wisse et al., 2015).

Stressors were identified by Maslach et al. (Maslach and Jackson, 1981), within three dimensions: exhaustion, depersonalization and reduced personal accomplishment. Most studies highlight the negative effect of stressors on the successful completion of professional tasks (Vanderberghe and Huberman, 1999; Shernoff et al., 2011; Pandey and Saxena, 2015).

In order to measure how teachers dealt with contextual factors during the first three months of online education in Romania, we used an own scale with four indicators (Table no. 1).

### **1.3. Specifics of education: offline vs. online**

Classic education is based on face to face interaction and the presence of teachers and students in each other's physical and personal proximity. Some elements, like eye contact, facial expression and gestures, body posture – i.e. the entire non-verbal behaviour facilitate communication, add to learning per se and increase the sense of belonging to the professional community. Teleworking, based on audio and video technology, as well as other gadgets, tries to compensate for some of these elements, considered important to supporting learning (Bialowas and Steimel, 2019). Even if online learning has many advantages and is a major reference point of future education, some researchers consider that it will never be able to completely replace traditional, face to face learning. Virtual education is provided in an environment in which teachers and students are separated from each other in space, time or both.

Other important issues, specific to the work of educators, are investigated in literature. The eye contact that the relationship between teachers and students is based on should create an optimal motivational environment for education (Velez and Cano, 2008; Zeki, 2009). The teacher's non-verbal behaviour and the way students receive it, as well as the visual and gesture-based response support interaction during the education process. This kind of participation facilitates a better understanding and consolidation of the subject matter (Wahyuni, 2017).

Several studies point to the role of eye contact in evaluating the emotion of students during the learning process, and stress that visual information, delivered through facial expression and gestures, is mostly missing in e-learning (Zeng et al., 2020).

Teacher immediacy, in terms of perceived distance, displayed through smile, gestures, eye contact, body posture, walking through the room while teaching, is positively correlated with student motivation and assertiveness and supports learning (Andersen, 2017).

There are less studies (Mauheni, 2016) on the perspective of teachers, i.e. on their perception and the importance they attach to eye contact with students and non-verbal communication in general, in the context of education.

#### **1.4. Student engagement in learning**

Student participation and engagement in distance classes through e-learning, during the COVID-19 pandemic, is a topic that has recently drawn the interest of several Romanian researchers (Ionescu et al, 2020; Edelhauser, 2020; Obrad, 2020; Coman et al., 2020, Gherheș et al., 2021).

There is an undeniable split between the urban and rural area of Romania, that leads to inequality of opportunities, in terms of access to technology and consequently to education. These barriers appeared mainly during the second academic semester of 2020 and still are a major obstacle to students from a poor and disadvantaged background, that prevents them from participating in online classes (Unicef România, 2020). Some other impediments to optimal online learning are technical problems (Internet connection, old equipment with connection errors etc.), issues related to becoming familiar with new communication technology etc. All these can restrain the engagement and participation of students in learning activities. However, one can also notice that sometimes students participate in online courses, but have a certain avoidance behaviour, like turning their cameras off during classes (Gherheș et al., 2021).

Moreover, the literature provides studies pointing to risks of teleworking in education: high risk to abandon school, especially in poor backgrounds (Kim et al., 2017).

## **2. Research methodology**

The research aim was to present the perception of distance education supported by modern communication technology, as observed among Romanian teachers. To this end, we considered following objectives:

- O1 – to identify the impact of the main educational constraints and contextual stressors on the work engagement of teachers;
- O2 – to establish the most important predictors of work engagement;
- O3 – to explore the relationship between the work engagement of teachers and the perceived student engagement and participation in online classes;
- O4 – to analyse how the specifics of education bear on the work engagement of teachers from Romania.

In order to reach the objectives, we performed a quantitative research, based on sociological inquiry. Data was collected through a questionnaire, distributed to 400 Romanian teachers from almost all levels of education (primary, secondary, high-school and university). The

data collection period covers the first months of online education in 2020 (March to June), corresponding to the second semester of the school year. The questionnaire included several measuring scales, that were built and validated for the Romanian context. The sample structure was established starting from existent statistical data, so as to be representative for the entire population of Romanian teachers, with a confidence interval of  $\pm 5\%$  and a confidence level  $P=95\%$ . The 400 respondents were located in 35 (out of 41) counties of Romania. The questionnaire was distributed online, on the platform isondaje.ro, between 24 May and 15 June 2020.

Starting from existent literature and research related to our topic, we suggested an own inventory of measuring scales with 16 indicators, conceptually grouped in 4 dimensions, as outlined in table no. 1.

**Table no. 1. Measuring model with dimensions, indicators and measuring scales**

Dimensions	Indicators	Labels	Measuring scale
Contextual professional factors (CONXT)	Feeling mentally tired	contxt1	1 – never 2 – rarely 3 – sometimes 4 – often 5 – nearly always
	Feeling exhausted	contxt2	
	Feeling tensioned about online teaching	contxt3	
	Feeling like having too much to do and too little time	contxt4	
Specifics of education (SPEC)	Seeing students while teaching	spec1	1 – unimportant 2 – of little importance 3 – moderately important 4 – important 5 – very important
	Being seen by students while teaching	spec2	
	Non-verbal behaviour of students (eye contact, gestures) in the educational process	spec3	
Representations of student engagement in learning (ANGE)	Student participation in online meetings	ange1	1 – decrease greatly 2 – decrease slightly 3 – stay the same 4 – increase slightly 5 – increase greatly
	Student motivation and interest in the subject matter	ange2	
	School performance of students	ange3	
Work engagement of teachers (ANGP)	Being fulfilled with the job	angp1	1 – never 2 – rarely 3 – sometimes 4 – often 5 – nearly always
	Feeling enthusiastic and passionate about work	angp2	
	Feeling inspired and creative in teaching	angp3	
	Wishing that online meetings with students won't come to an end	angp4	
	Feeling full of energy	angp5	
	Feeling that I contributed to the wellbeing of students	angp6	

The collected data was analysed with social statistical software: IBM SPSS version 25 and IBM Amos, version 23.

The proposed measurement model was based on following hypotheses:

*Hypothesis 1 (H1):* Contextual factors (CONTXT) have a negative effect on work engagement among teachers (ANGP);

*Hypothesis 2 (H2):* Contextual factors (CONTXT) have a negative effect on the perceived student engagement and participation (ANGE);

*Hypothesis (H3):* There is a direct association between the importance given to factors related to specifics of the educational activity (SPEC) and work engagement in teaching (ANGP);

*Hypothesis 4 (H4):* There is a direct relationship between the perceived student engagement in learning (ANGE) and the work engagement of teachers (ANGP).

### **3. Results and discussions**

In order to reach the research objectives and test the hypotheses, we used several basic statistical techniques that include descriptive univariate analysis, as well as advanced techniques: confirmatory factor analysis (CFA) and structural equation modelling (SEM).

The univariate analysis provided essential information on how teachers felt about their professional activity during the first months of teleworking. Over this period, teachers from Romania showed both positive, and negative attitudes and states. Despite a general discontent, called forth by the sudden change and shared by 69.1% of the teachers, 71.7% of the respondents find that the new technologies and instruments yield multiple benefits for education. Nevertheless, 92.8% of the Romanian teachers agree on the fact that the education system from Romania was not prepared for shifting to online teaching. Moreover, many respondents find that teaching online on long term has a negative impact on school performance (85.1%). Opinions are divided on the question „Did you feel prepared to teach online when schools closed?”; 45.8% of the respondents gave a negative answer, and 46.3% an affirmative one. A further issue that respondents largely agreed on was that students had limited access to the new technologies and instruments required by teleworking, due to poverty (86%).

#### **3.1. Work engagement of teachers (ANGP)**

Work engagement was described by 5 indicators (Figure no. 1). Based on their responses, teachers reached positive scores at 4 items; professional constraints had no significant impact on how they felt about their work. 50.3% of the participants in the study show they are fulfilled with the job, while 66% claim they were enthusiastic about teaching most of the time or quite often, over this period. Besides, 58.2% of the respondents felt inspired and creative in teaching, and 50.3% considered they were mostly able to have a positive influence on the life of their students, in this new context. They expended much energy to this end, as revealed by the 5<sup>th</sup> indicator: only 17.1% of the teachers had an energy surplus during this period.



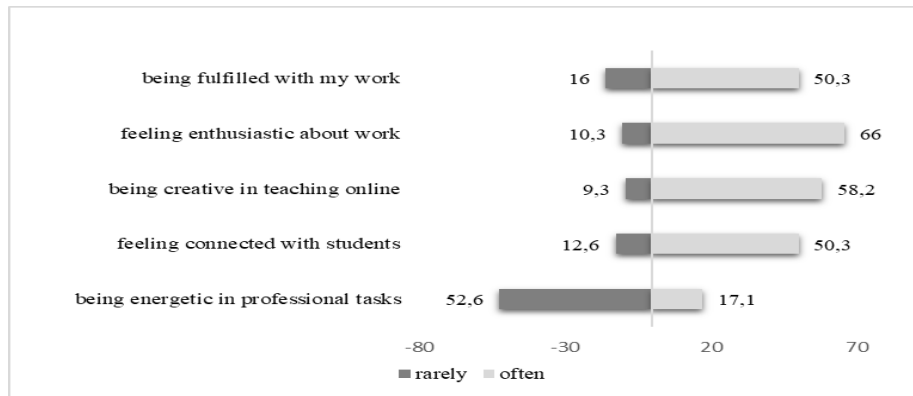


Figure no. 1. Work engagement of teachers in teleworking

### 3.2. Contextual professional factors (CONTXT)

Changes brought by shifting from direct teaching to teleworking generated a certain level of mental fatigue (sensed by 47.4% of the teachers), or even exhaustion (44.2%). Nearly half of the respondents (49%) find they had too much to do in too little time during this period. The workload, measured in number of extra working hours spent on getting familiar with the new technologies, as well as preparing and adapting the teaching content to e-learning, increased moderately and greatly to 88.1% of the teachers (cumulative percentage). All these professional changes, that had to be dealt with promptly, generated occupational stress and required much energy. Teachers needed to adapt to new professional requirements at short notice, and 75% of them felt that this context generated stress.

### 3.3. Specifics of education (SPEC)

As to specifics of the interaction between teachers and students, 84% of the respondents feel that being able to see students while teaching is important or very important. Almost equally important is that students can see their teacher during classes, as found by 79% of the respondents. Teachers claim they were not always able to make eye contact with those they interact with, either because the perception on screen was different from the one in a face to face meeting, or out of technical reasons, that prevented students from being seen. Broadly, 84% of the Romanian teachers agree on the fact that non-verbal behaviour (eye contact, gestures, physical proximity etc.) is important or very important to education.

### 3.4. Representations of student engagement and participation in online learning (ANGE)

More than half of the teachers from Romania (53%) find that students were less interested in the teaching content, while 31.5% believe that the interest of the students remained unchanged. Only 12.8% of the respondents perceived a slight or a great increase in the motivation to participate in classes, whereas this increase was mostly observed in higher education. As to attendance at online meetings, 62.5% show that it decreased during the first

months following the pandemic outbreak. School performance was another indicator we used for measuring student engagement. In this regard, 37% of the teachers point to a slight decrease, and 14.8% even to a great decrease. 29.5% of the respondents claim that school performance remained unchanged, while only 10.6% report a great increase in the indicator.

The next step of the multivariate statistical analysis was performed by means of the statistical software IBM Amos. We imported from SPSS the 4 factors, with the associated indicators, as displayed in Table no. 1. Following factorial model resulted, proposed for evaluation (Figure no. 2)

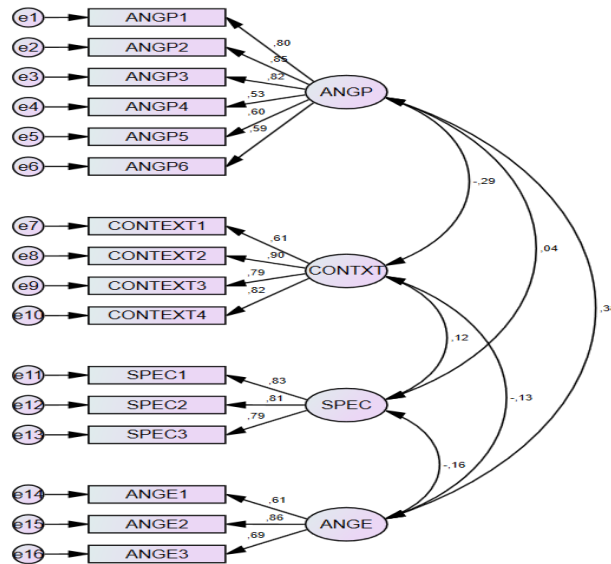


Figure no. 2. Factorial model proposed for evaluation based on CFA

3.5. Testing the validity of the factorial model and the internal consistency of the items

Prior to performing a measurement in factor analysis, we needed to test the reliability and validity of the factorial model.

The reliability or internal consistency of the items on measuring scales was tested with Chronbach Alpha. We computed the coefficient for each group of indicators corresponding to the four factors and reported the results in Table no. 2. A reliability coefficient  $\alpha$  higher than 0.7 (George and Mallery, 2003), as it was our case, stands for a high internal consistency of the items that belong to the four factors of the model.

Table no. 2. Internal consistency of the items for the scales used in the study

	CONTXT	SPEC	ANGE	ANGP
Cronbach Alpha	0.86	0.85	0.76	0.85

In terms of validity, a conceptual model needs to fulfil simultaneously both the convergent validity, and the discriminant validity criterion, as neither of the two conditions is sufficient by itself (Trochim et al., 2015).

As to the convergent validity of our model, we considered two statistical criteria (Hair et al., 2013).

- Average variance extracted (AVE) > 0.5;
- Composite Reliability (CR) > AVE.

The average variance extracted (AVE) is the variance that is explained by a model in relation to the unexplained variance (errors or residuals). The composite reliability (CR) indicates a higher confidence when its value is higher than 0.7 (Hair et al., 2005). AVE and CR were computed based on a module that could be inserted in Amos (Gaskin and Lim, 2016). (Table no. 3)

**Table no. 3. Reliability and validity measures**

Model factors	CR	AVE	MSV	ASV
ANGP	0.85	0.50	0.15	0.08
CONTXT	0.86	0.61	0.08	0.04
SPEC	0.85	0.65	0.02	0.01
ANGE	0.77	0.52	0.15	0.06

Notes: \*CR – Composite Reliability, AVE – Average Variance Extracted, MSV – Maximum Shared Variance, ASV – Maximum Shared Variance

We find that AVE is higher than 0.5 for each factor of the model. Moreover, the relationship CR > AVE is observed; we may claim that both criteria of convergent validity are met.

Following statistical criteria need to be applied for testing discriminant validity:

- AVE (average variance extracted) > MSV (maximum shared variance);
- AVE (average variance extracted) > ASV (average shared variance).

The third column of the table on validity measures (Table no. 3) displays the maximum shared variance (MSV); by comparing it to AVE, we can claim that the first statistical criterion of discriminant validity is fulfilled.

Since Amos does not provide an automatic calculator for average shared variance, or the average of factor shared variance, we computed ASV for each factor of the model, as an average of its square of covariance with the other factors (Table no. 3). By comparing ASV to AVE, we find that the convergent validity and discriminant validity criteria are simultaneously fulfilled.

### 3.6. Requirements of the confirmatory factorial analysis (CFA)

The next step of the analysis was to check if the requirements that allow us to perform a confirmatory factorial analysis (CFA) are met: we tested the sample size and the multivariate normality.

As to the sample size, several studies find that the minimum number of cases in the sample, necessary for a confirmatory factorial analysis is of 200 (Kline, 2011). Other researchers advise that the minimum number of respondents should be calculated depending on the

number of items. Hu and Bentler (1999) suggest that a ratio of 10 respondents per item is preferable. Our model, including 16 items, should hence require a sample of 160 cases. This condition is fulfilled, as the designed sample of the study consists of 400 respondents.

Normality was assessed with reference to kurtosis and skewness. The average kurtosis of our data, or the average of the individual values of each indicator was 0.44. As to skewness, the lowest value was -1.8 and the highest 1.1. According to the thresholds recommended in literature (Gravetter and Wallnau, 2014) for the two indicators of normality, these should fall within the range (-2.2). Our data meets this criterion: hence, we have a normal multivariate distribution.

**3.7. Testing the model fit**

We performed a confirmatory factorial analysis (CFA) in order to test whether the empirically collected data confirmed the factorial model that we started from (Figure no. 2). Following a literature review on the most frequently reported indices of model fit, we selected  $\chi^2$  and SRMR as absolute fit indices, RMSEA and PCLOSE as correction indices, and CFI, GFI and TLI as comparative indices (Table no. 4). The table below includes a comparative analysis of the model fit indices, before and after their respecification.

**Table no. 4. Fit indices**

Fit indices	$\chi^2$	df	p	$\chi^2/df$	GFI	CFI	RMSEA	PCLOSE	SRMR	TLI
Recommended values				< 3	>0.9	>0.9	< 0.08	> 0.05	< 0.08	>0.9
Initial values	201.80	98	0.000	2.06	0.94	0.96	0.05	0.39	0.05	0.95
Values after respecification	153.26	84	0.000	1.82	0.95	0.97	0.04	0.73	0.05	0.97

Note:  $\chi^2$  – Chi square, df – degrees of freedom, p – probability level, GFI – goodness of fit index, CFI – comparative fit index, RMSEA – root mean square error of approximation, PCLOSE – closeness of fit, SRMR – standardized root mean square residual, TLI - Tucker-Lewis index

The indices show in most cases a very good model fit (except for  $\chi^2/df$ ). However, when reviewing the modification indices from the Amos output file, we noticed very high indices for two residuals, associated to indicators of ANGP (work engagement of teachers), i.e. the pair e4 and e5, as well as the pair e5 and e6 (covariance e4 and e5 = 17.40, covariance between e5 and e6 = 11.80; the highest values for covariance between residuals of indices that belong to the same construct).

Consequently, we decided to respecify the model, so as the indices are as close as possible to the values that are recommended in literature. Based on this decision, we eliminated the item e5 – „being energetic in professional tasks” and reran the factorial analysis. The assessment of the new estimated parameters showed that all fit indices had excellent values. Moreover, modification indices show that no other interventions are required for improving the model fit. Based on the above, we concluded that the presented model was consistent with the empirical data.

### 3.8. Path analysis and structural equation modelling (SEM)

Starting from the respecified structural model, we went through following phases:

- Drawing the path diagrams
- Testing the causal relationships between the factors (hypotheses)
- Testing the direct and mediation relationships
- Testing the statistical significance of the relation between the variables

Based on prior knowledge in the field, we proposed a set of hypotheses associated to the structural model, as illustrated by Figure no. 3. We examine the initial assumptions on the existence of certain causal relationships between the factors of the model: contextual professional factors (CONTXT), student engagement in online learning (ANGE), specifics of the professional activity (SPEC) and work engagement of teachers (ANGP).

Path coefficients show direct effects of predictors on predicted variables, as well as standard errors (S.E.) and statistical significance thresholds (P).

Based on the computed values, we notice that the constraining factors of the professional context (CONTXT) have a negative impact on the work engagement of teachers (ANGP):  $\beta = -0.35$ ;  $p < 0.001$ . As to the influence of contextual factors on how teachers perceive student engagement in learning, the association is negative, but weak and there is no statistical significance:  $\beta = -0.12$ ;  $p > 0.05$ .

The higher occupational stress (CONTXT) calls forth an increased awareness of the importance of eye contact and non-verbal behaviour during teaching (SPEC); though the intensity of this effect is weak, it is statistically significant:  $\beta = 0.14$ ;  $p < 0.05$ .

Teachers that regard non-verbal behaviour and other specifics of education (SPEC) as important to teaching are likely to show an increased engagement in teleworking (ANGP):  $\beta = 0.12$ ;  $p > 0.05$ . The determination is once again low.

The fundamental factors of the teaching – learning relationship had the strongest correlation, connecting the two parties of education to each other. When teachers perceive that student engagement in learning (ANGE) is high, their work engagement (ANGP) increases:  $\beta = 0.43$ ;  $p < 0.001$ . (Table no. 5)

**Table no. 5. Results of hypothesis testing**

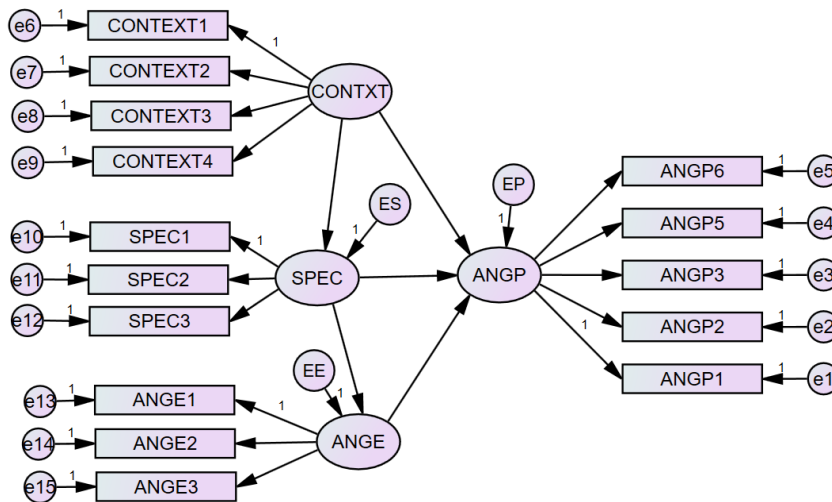
Research hypotheses	$\beta$	S.E.	C.R.	p	Decision
H1: Contextual factors Work engagement of teachers →	- 0.35	0.07	2.03	***	Accepted
H2: Contextual factors Student engagement →	-0.12	0.06	- 1.88	> 0.05	Rejected
H3: Specifics Work engagement of teachers →	0.13	0.06	2.29	< 0.05	Accepted
H4: Perceived student engagement Work engagement of teachers →	0.43	0.07	5.87	***	Accepted

Note:  $\beta$ - standardized regression weight, S.E. – standard error, C.R. – critical ratio, p – probability value

Though we haven't established a specific working hypothesis, we observe there is a negative association between the importance associated to non-verbal behaviour in teaching and other specifics of the teacher-student relationship (SPEC), and the perceived student engagement (ANGE):  $\beta = -0.13$ ;  $p < 0.05$ . However, this connection is not strong. An explanation of this result may be related to how teachers perceive the limits of online education as to the non-verbal feedback from students. When the visual response (facial expression, gestures and behaviour) is important to teachers, student engagement will automatically be perceived as lower in online education.

Beyond these direct effects, we also tested the existence of mediated relationships between the research variables. These were not statistically significant. After testing the relationships between constructs, we respecified the structural model, as shown in Figure no. 3.

Figure no. 3. Adjusted (respecified) structural model after hypothesis testing



Conclusions

Changing from conventional learning, with physical proximity of teachers and students, to teleworking, led to the emergence of contextual professional factors that constrained teachers in Romania and caused a certain level of occupational stress. During the first 3 to 4 months after the COVID-19 pandemic outbreak, teachers had to cope with a heavier workload, most of it bearing unmet expectations, that had to be dealt with rather quickly, against a background of social and professional uncertainty and rapid change. Half of them found they had most often too much to do in too little time. The most frequently perceived effect of school closure was stress, caused by the need to adapt to new technologies, as required by online teaching.

Teachers in higher education got used to new technologies and online education faster than teachers from primary and secondary schools, due to their prior experience with teleworking. Moreover, the impact of the contextual factors mentioned above was weaker in urban, than in rural areas.

Contextual factors (stress and workload) had a negative influence on work engagement in teaching. Their effect is in inverse ratio with the extent to which teachers identify themselves with their work and are positively related to it.

The research on the work engagement of teachers from Romania led to several conclusions and implications. The study showed that work engagement is related to different items. Out of all indicators that this behaviour consists of, affective involvement explained it to the greatest extent.

From a different perspective, the study showed there are predictors that enhance work engagement, such as the interaction between teachers and students, where non-verbal behaviour, eye contact and other elements of physical proximity play an important role. Beyond the benefits of online learning, teachers are affected by the lack of immediate communication in physical proximity and its specific features. It's hardly possible to replicate specifics of face to face learning in e-learning; hence the work engagement of teachers declines.

One of the most important results of the study is the identification of the most significant predictor of work engagement in teaching. The assessed student engagement in learning predicts to the greatest extent the behaviour of teachers in their work. The enthusiasm with the own job, creativity and interest in e-learning decrease when teachers feel that the interest, motivation and feedback of students are low. On the other hand, when the participation and engagement of students are perceived as being high, the work engagement of teachers increases. Good school performance of students is positively associated with high teaching engagement. A large participation of the students in online classes, both in terms of attendance, and of cognitive-reflexive and emotional involvement leads to a stronger work engagement of teachers.

As proven by other studies, the effect is reciprocal: when teaching is performed with enthusiasm and passion, and students are supported, they will engage more in learning. This ambivalence suggests that measures to increase the involvement of both groups in education will have a multiplying impact on their engagement, through direct and indirect effects.

Teachers and students belong to a professional group, or a professional community on a larger scale, within which the quality of the relationship and the connection between the two parties enhances engagement in teaching and learning, though the teaching environment may change. Engagement in education, on either part, is essential to the productivity and sustainability of an education system, in the long run.

Future research is without doubt necessary for creating a longitudinal perspective of work engagement in teaching, as well as for identifying further predictors of this behaviour; the limit of our study is that it provides a diagnosis of merely the first months of online teaching in Romania.

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