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Role transition of higher education teachers due to disruptive technological change: Identity reconstruction for a better teacher-student relationship

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ABSTRACT

This paper highlights the importance of higher education teachers' professional identity in the field of management, especially when faced with crisis events or disruptive technology. By employing the Bridges transition framework, we comprehended the profound transformation brought about by the pandemic and suggested proactive measures to effectively address future obstacles that significantly affect teaching methods. Based on a PLS-SEM analysis performed to examine the outcomes of an online survey (N = 145), our study provides insights into the connections between changes in the teachers' identity, digital mastery, successful role transition, and the teacher-student relationship. Our results show that the loss of teaching identity has a direct negative impact on the digital mastery, the success of the transition of the teaching role, and the student-teacher relationship as well. We suggest that a transition process is successful if it is well-managed and supported during its psychological phases, places significant emphasis on the phenomenon of loss of identity and provides guidance towards defining the new identity.

1. Introduction

As the Coronavirus disease spread all over the world and brought crisis in several professions, it forced higher education to shift from a face-to-face to a distance mode (Ghazi-Saidi et al., 2020; Ng et al., 2023; Ramlo, 2021). This dramatic shift might be followed in the future by other disruptive changes to face for higher education teachers – caused for instance by new technologies such as the generative Artificial Intelligence. When studying transformation, many research projects focus on the technocratic side of how to adapt to such challenges, or how to manage change (Garcia & Gluesing, 2013; Perdana & Mokhtar, 2022; Ratten & Jones, 2021). What is often missed is the psychological perspective of reacting to radical change in terms of identity. We have relatively little knowledge on how radical technological change affects the professional roles and identity of impacted professionals including various industry workers and teachers. In this paper, we focus on the challenges of the pandemic and explore its impact on identity in the context of online higher education.

It is widely accepted that distance management education, including online teaching, differs from face-to-face teaching, therefore, its own practices and pedagogies need to be developed (Baran et al., 2011; Kahn, 2020; Laat et al., 2007). For example, teachers who "enjoy the independence and self-determination they experience in the face-to-face environment" may face difficulties in acceptance of an online mode of teaching (Stickney et al., 2019, p. 528).

Challenging the assumption that there is significant difference in particular courses when taught face-to-face or online, DeArmond

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et al. (2023) found that both modality of delivery can be equally effective in for example professional skills teaching as well suggesting that there are other factors influencing the learning outcomes. The study of Mahajan et al. (2023) identifies five major themes impacting management education: digital teaching and learning, collaboration and partnership, embracing uncertainty and resilience, transformation and innovation, and developing an entrepreneurial mindset. These themes highlight the shifts in management education driven by the pandemic, emphasizing the need for adaptation in teaching methods, greater collaboration, and resilience-building. Liguori and Winkler (2020) explored both the challenges and potential opportunities of the transition from offline to online entrepreneurship education. In instances where experiential learning is emphasized, such as in entrepreneurship education, effectively replicating "experience" in an online format poses challenges. Efforts to adapt this approach online must incorporate Kolb's experiential learning theory (1984) to create a suitable learning environment, beyond simply replicating in-person interactions (Kakouris, 2009). In this sense, asynchronous learning methods may be critically important for reflective processes, just as synchronous methods are. From the educators' perspective, the changing learning environment may require altered roles that may be significantly different from the one they are used to, this process would therefore impact their professional identities (El-Soussi, 2022; Nazari & Seyri, 2023). Liguori and Winkler (2020) emphasized the importance of innovatively integrating online learning while maintaining the quality and effectiveness of education. These studies underscore the ongoing evolution in management education and the critical importance of these themes in shaping future educational strategies.

There is research showing how crisis distance management education can be differentiated from traditional distance education along several aspects. Crisis distant education, also known as emergency remote teaching, refers to a temporary adaptation in response to crisis situations (Hodges et al., 2020). Its purpose is to swiftly and reliably provide access to educational content, without the luxury of time for extensive online material preparation, in a sustainable manner. This frequently leads to a dependence on synchronous sessions as a consequence of insufficient resources and assistance, which includes a restricted amount of time for preparation. Although both science and practice know much about traditional distance education, crisis distance education is not only adopted regardless of readiness and without being psychologically prepared previously, but it replaces and totally excludes face-to-face education without being agreed upon by both teachers and learners (Al Lily et al., 2020). Therefore, such a sudden shift forced institutions and teachers into an unfamiliar transformation in a digital sense. On one hand, teachers needed to change some of their core beliefs and expand their knowledge of technological and methodological issues, which involved a great effort and strain from their side (MacIntyre et al., 2020). On the other hand, they had to cope with their suddenly changing roles, rethink their practices and identity (Collins et al., 2020), and restructure their relationship with their students (Tian et al., 2022), although this process remained neglected and lacked institutional support.

Studying organizational change and transitions, Bridges (1986) argued that these two are significantly different concepts. His main idea was that things may change quickly, but people do not – even if they were under great pressure. He came up with a theory in which he defined transition as "a three-part psychological process that extends over a long period of time and cannot be planned or managed by the same rational formulae that work with change" (Bridges, 1986, p. 25). He highlighted the importance of knowing the structure and the process of transitions, so that it could be managed more effectively. Bridges outlined that all change is accompanied by the psychological process of transition when identity is reconstructed, and skills and relationship qualities alter.

We looked at the transition process of higher education teachers from the perspective of the student-teacher relationship, as a positive teacher-student relationship enhances learning abilities and therefore academic achievements (Bailey & Phillips, 2016; Cramp & Lamond, 2016), strengthens the sense of belonging (Komarraju et al., 2010), and contributes to the well-being of students (Eloff et al., 2021). There is a stream of research dedicated to investigate the role of educators and their interactions with students to improve online learning experiences (Hwang, 2018; Marks et al., 2005). Therefore, it is of utmost importance to reveal and test underlying interdependences. Teacher identity is said to be reflected in the student-teacher relationship as well (Flores, 2014; Izadinia, 2016; Mantai & Huber, 2021; Nygård et al., 2020).

It is widely agreed upon how the direct work environment, the wider context of higher education, the interaction with students, and staff development activities impact teacher identity development in higher education (van Lankveld et al., 2017). Thus, the change from face-to-face to an online way of working qualifies as a new frame of reference. Also, rebuilding or restructuring a positive teacher-student relationship within the altered circumstances (digitalization, or simply due to the introduction of more advanced pedagogical tools such as experiential learning), turned out to be a hard challenge for educators (Mantai & Huber, 2021). According to the qualitative study by Baran et al. (2013), teachers reported that to reach success in online teaching during traditional distance education they had to defeat challenges of being "heard, known and felt by students" constantly. Until arriving in a state of an established positive relationship, teachers go through a transition process through which they might learn new competencies to replace sensory and expressive skills in the digital environment (ibid.). During crisis, however, there is much less time for such transition, therefore, paying attention to how the learning of new (digital) skills, the reconstruction of teaching identity, and the evolution of the student-teacher relationship are interrelated in times of radical change could lead to a better understanding that might have practical implications for the preparation for another technological shift in non-emergency times as well.

Based on our investigation, we formulated our research question as follows: What is the impact of fast digital change, particularly during the COVID-19 epidemic, on the aspects of Digital Transition (Loss of Identity, Digital Mastery, Successful Role Transition)? How do these constructs influence the quality of teacher-student relationships? On the basis of transition theory, PLS-SEM modelling was conducted to shed light on these impacts. Our results show that Loss of Teaching Identity plays a significant role in the transition process, as it has a direct negative impact on Digital Mastery, Successful Role transition, and the Student-Teacher Relationship.

2. Theoretical background and hypotheses

2.1. Transition theory

We choose Bridges' (1986) transition theory as the theoretical framework for our analysis. This is a well-established and time-proof framework that helped scholars (particularly in the field of health care) to understand and make sense of individual internal dynamics following life changes in the past 40 years (Bridges & Bridges, 2019). Bridges makes a distinction between the concepts of 'change' and 'transition.' 'Change' is described as a situational and external shift, focusing on new circumstances such as different locations or roles. On the other hand, 'transition' is understood as an internal, psychological process that individuals undergo in adapting to and accepting these new changes (Bridges, 2003).

Bridges (1986, 2003) argued that change happens together with a transition process, through which people experience three psychological states of (1) letting go of the old situation with associated roles and identities in the 'ending stage', (2) going through a liminal, unclear 'neutral zone' between the old and the new, and (3) making a 'new beginning' (Fig. 1.). All of the above listed phases may be of subjective experience, lacking rationality, and over a certain time frame, as a successful transition may require new skills, altered relationship qualities and reoriented cognitive structures (Badiozaman, 2021).

Graf et al. (2020) critically examined various transition theories, including Bridges' transition theory, in the context of newly qualified graduate nurses' transition into clinical practice. They assured that Bridges' theory highlights three stages of transition: 'letting go', 'neutral', and 'new beginnings', suggesting a linear progression through these stages. This model emphasizes the importance of acknowledging and working through each phase to effectively adapt to changes in professional roles. The paper underscores that successful transition in nursing requires not only an understanding of these theoretical stages but also adequate support through the transition process to ensure effective adaptation to the new professional role and environment.

In light of the unique difficulties posed by the pandemic or by supposedly other upcoming disruptions, our analysis corresponds with Bridges' three-phase transition model to provide a framework for understanding the process of adapting to these environmental changes. We argue that this transition begins with a phase of dis-identification, which signifies a loss of one's professional identity within the realm of education. During the phase known as the 'neutral zone', educators have the opportunity to acquire new abilities, namely in Digital Mastery. This enables them to effectively build a redefined professional identity and successfully transition into a new role. This process of transformation has a significant impact on the relationship between teachers and students, as it redefines the way they engage within the digital educational environment. The transition to online education caused by the pandemic illustrates a change in the circumstances, which requires educators to undergo an internal transformation as they adapt their established identity to new digital roles. This process, characterised by stages of ending, neutral zone, and new beginnings, requires educators to reevaluate their role in a developing educational environment, promoting flexibility and perseverance in response to the disruptive nature of these changes (Fig. 2.).

2.2. Constructs and Research Hypotheses

Challenges of the pandemic. Changes in the environment are mirrored by organizational transitions (Schumacher & Meleis, 1994). On one hand, the pandemic shocked education systems and organizations. On the other hand, it facilitated and precipitated digital transformation. In our study, we have defined the construct 'Challenges of the Pandemic' as the constellation of emerging education-related challenges caused by the pandemic. These challenges act as the external contingencies that may be reflected in teachers' identities (Ball, 2003). Any other radical change can trigger this mechanism of action. We conducted a study to assess the impact of the pandemic, as it was the pertinent external factor that all respondents had personally encountered. The COVID-19 pandemic necessitated a significant shift in the education sector towards online platforms, surpassing previous levels of use. Additional such crises may include environmental catastrophes (such as hurricanes or floods), armed conflicts (such as the Russian-Ukrainian war), or the adverse economic aftermath of combat (such as energy shortages or heating difficulties). As Barnes

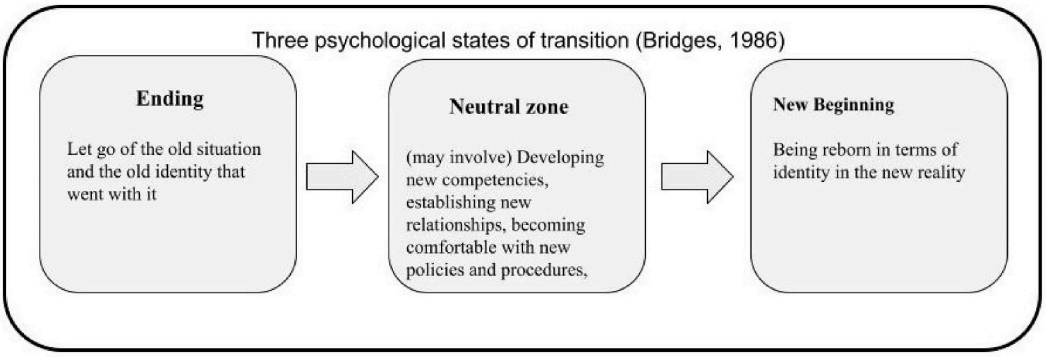

Fig. 1. The three psychological states of transition (Bridges, 1986).

Fig. 2. Educators digital transition in emergency shift.

(2015) highlighted, the triggered identity struggles within the context of crisis distance education are indicated by a transition of teachers' roles, including a behavioural change and skills development (such as Digital Mastery).

H1a. Challenges of pandemic has a positive impact on (and therefore reinforce) the Loss of Teaching Identity

H1b. Challenges of pandemic has a negative impact on Digital Mastery

H1c. Challenges of pandemic has a negative impact on Successful Role Transition

Loss of Teaching Identity. At the heart of the teaching profession lies the teacher's identity, which critically shapes their pedagogical practices, professional aspirations, and trajectories of professional growth. This identity, pivotal in its role, acts as a foundational element that defines and directs the journey of educators in their continuous pursuit of professional development and excellence in teaching (Beauchamp & Thomas, 2009). According to definition, the concept of teacher role identity stands at the core of the teaching profession as it encompasses the negotiation and continual reshaping of 'how to be', 'how to act', and 'how to understand' one's work and place in society (Beauchamp & Thomas, 2009; Sachs, 2005). This evolving identity, deeply influenced by personal and professional experiences, guides teachers in their professional development and commitment, aligning their practices with their evolving sense of self within the educational context.

In the realm of teaching, profound shifts such as the transition to entirely online education represent significant disruptions. These changes may exert substantial pressure on the professional identity of educators, leading to considerable tensions as they adapt to these new educational landscapes. Teachers' professional identity "is manifested in how much time, energy and enthusiasm teachers spend on teacher activities" (Skinner et al., 2021, p. 5). With reference to our theoretical basis, during the forceful shift to distance education, teachers could become confused by their roles and teaching practices and their struggle could have ended with a negative impact on the sense of their professional identities. This would later lead to anxiety, stress, and a decrease in mental well-being (Skinner et al., 2021).

According to Pearlin et al. (1990), loss of identity can be defined as experiencing the effect of emerging new activities that exclude roles and activities that had been sources of self-validation. During the transition that teachers have experienced within the context of the emergency, starting with the radical technological shift in our case, one crucial condition for the success of the transition is that teachers manage to reconstruct and become familiar with their new identities – after the loss of their teaching identities – to be able to arrive at the 'new beginning' phase which is indicated with the Successful Role Transition construct referring to a successful completion of the process. However, loss of identity may also result in feelings related to a lower sense of mastery (Skaff, 1990; Skaff et al., 1996; Skaff & Pearlin, 1992) which could also hinder this process and also have an impact on the teacher-student relationship (Hernández-López et al., 2016).

H2a. Loss of Teaching Identity has a negative impact on Digital Mastery

H2b. Loss of Teaching Identity has a negative impact on Successful Role Transition

H2c. Loss of Teaching Identity has a negative impact on Teacher-Student Relationship

Digital Mastery. Mastery is generally used as a global construct, meaning an "overall sense of control over the salient arenas of life (Rodin, 1990). According to Bandura (1977), mastery involves the belief that one has the ability to cause an outcome. More specifically, Digital Mastery is defined here as the sense of being able to use digital tools in online education effectively. As the online environment requires altered teaching practices, many teachers may feel less control over how to adjust their courses due to the lack of visual or face-to-face interaction with students (Kebritchi et al., 2017). In their study, Hernández-López et al. (2016) investigated the impact of instructors on students' competency growth and acquisition of knowledge, as reported by the students themselves. Their findings suggests that the quality of the teacher-student relationship is crucial in helping instructors choose successful teaching methods, which in turn improves students' ability to acquire knowledge. Within a trustworthy teacher-student relationship, students are provided with enhanced chances to seek explanation and get feedback. This highlights the need for educators to adapt to evolving methodological challenges. Such ability indirectly promotes strong teacher-student relationships by influencing students' views and experiences in the educational environment. Digital mastery in this regard could be the key for educators to reach out to their students and align with them, thus fulfilling their new roles as teachers and re-establishing a positive and relevant relationship with students in the digital environment.

H3a. Digital Mastery has a positive impact on Successful Role Transition

H3b. Digital Mastery has a positive impact on Teacher-Student Relationship

Successful Role Transition. Chick et al. (1986) argued that a change in a job or a career path could be of utmost significance for an individual in terms of transition. Transitions are not considered life events but as complex processes that alter the structure of the everyday of a person (Skaff et al., 1996). As a working role (and thus the individual's status) is considered to define a socially expected behaviour pattern in a particular society, role transition indicates "a change in behaviour, self-redefinition and acquisition of new skills and competences" (Barnes, 2015). When the role transition is successful, "there is a subjective sense of well-being, increased confidence and competence, good connections with others, mastery of skills and autonomous practice" (Barnes, 2015, p. 142).

Teacher-Student Relationship. The relationship between teachers and their students is important regarding academic achievements, students' mental well-being and learning abilities (Bailey & Phillips, 2016). Frymier and Houser (2000) argued that affective learning, including students' attitude towards their teacher, enhances cognitive learning. Studies investigating the unique relationship between teachers and students compared the relationship with any other interpersonal relationship, in the sense that it goes through a process from initiation, through intimacy, to dissolution (DeVito, 1986). The significant differences are that it lacks equality and has a time constraint (Frymier & Houser, 2000). Virumbrales et al. (2022) explored with a mixed methodology how the forced transition during the COVID pandemic affected aspects of teaching and learning in a medical academic context. They have identified the teacher-student relationship as one of the key aspects of teaching which is impacted by the transition, therefore needed to treat with particular care during the implementation of further technological changes. They found that both teachers and students felt a loss and a decline in the quality of the relationship. Furthermore, in their primary and secondary school-level research, Tzankova et al. (2022) showed that the teacher-student relationship should be adapted after a shift from face-to-face to an only-online mode, which can be supported by the acquirement of technology-related knowledge and skills. However, a lack of adaptation may lead to dissatisfaction and a sense of abandonment within the students.

H4. Successful Role Transition has a positive impact on Teacher-Student Relationship

3. Methodology

3.1. Sampling and data collection

The sampling frame consisted of university teachers in management studies. The survey link was shared with participants by email. The final convenience sample included 145 complete responses. The descriptive analysis showed that respondents were almost evenly split between female (50.3%) and male (47.6%), 2.1% preferred not to choose. Their average teaching experience was 17.5 years (SD 10.9) but only 19.8% had more than 2 years online teaching experience. 58% of our respondents had no preliminary experience in online teaching. The data was collected between April and July 2021. The online survey was distributed to all universities in Hungary where management studies were taught. In addition to Hungarian schools, researchers randomly selected other management schools in Europe, America, and Asia. The final 145 responses distribution comprised 78% from different Hungarian universities and 22% from non-Hungarian universities (including Chinese, French, Polish, English, Austrian, Mongolian, Slovak, Romanian, USA).

3.2. Research instrument

We designed a structured, web-based survey using Qualtrics. Multi-item scales for construct assessment were developed following the guidelines proposed by Diamantopoulos et al. (2012). The elaboration of the five constructs (*Challenges of Pandemic, Loss of Teaching Identity, Digital Mastery, Successful Role Transition, Teacher-Student Relationship*) used in this study was based on prior research. The constructs were rated in accordance with statements on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). All our constructs were of a reflective nature. The initial construct definitions were tested to assess answer scale validity and to ensure reliability using short open-ended interviews with a pilot sample (n = 20) of respondents who were asked about their role transition experience. Multiple (18) items to assess the five constructs were generated, based on data from the pilot study. Following the pre-test, we invited four scholars to provide expert validation and ensure the items' consistency. The survey completion time was less than 10 min, and respondent fatigue was minimal.

3.3. Constructs and measures

Because of the shortage of measurement scales on this topic, all five constructs were self-developed.

Challenges of Pandemic was modelled as a construct with which our intention was to measure teaching challenges caused by the pandemic (e.g. changing teaching practices, perception of teaching difficulties). The concept was assessed using the following three items: "The pandemic made teaching more complicated for me", "The pandemic made it more difficult for me to fulfil my teaching tasks" and "The pandemic made me face many challenges in teaching".

Loss of Teaching Identity was measured by a self-developed scale with the intention of measuring the degree of self-redefinition during the transition process. The scale measuring the construct consisted of three items: "I have lost a sense of who I am as a teacher", "I have lost an important part of my teaching self" and "I can't teach the way teaching should be done".

Digital Mastery was measured to identify how successfully teachers could acquire new digital technologies to use them in their teaching practices. The scale consisted of the following items: "Using digital interfaces enables me to accomplish my teaching tasks more quickly", "Using digital technology improves the quality of my teaching", "Using digital technology makes teaching easier", "Using digital technology enhances my teaching effectiveness" and "Using digital technology gives me greater control over my

teaching".

Successful Role Transition was a self-developed construct, consisting of three items: "The role transition from offline/traditional education to online education was easy for me", "I have become a better teacher because of the digital transition" and "It was easy for me to adapt to online education". Our aim was to investigate how easily and successfully the educator could switch to online teaching.

Teacher-Student Relationship was a self-developed construct to measure to what extent educators are able to elaborate and maintain relationship with their students. We used the following statements: "I can easily get closer to my students in the digital environment", "I can easily develop a good relationship with my students in the digital environment", "I can break the ice during class more easily in the digital environment" and "I can get along with my students more easily in the digital environment".

3.4. Data analysis

The descriptive analysis was carried out using SPSS (version 25). Our model was tested using Partial Least Scale Structural Equation Modelling (PLS-SEM), a statistical modelling technique that enables the examination of intricate causal linkages including both latent variables, represented as circles, and observable variables, displayed as rectangles. With PLS-SEM, we investigated the associations between latent constructs including *Challenges of Pandemic, Loss of Teaching Identity, Digital Mastery, Successful Role Transition, Teacher-Student Relationship* (using path analysis). ADANCO (version 2.2.1) was applied to test the measurement and structural model used in the research (Dijkstra & Henseler, 2015). The use of PLS-SEM is justified by (1) the exploratory nature of this study; (2) the small (145) sample size; (3) the scale development assessed in this study, in which items are measured on a 7-point Likert scale (see e.g. Hair et al., 2011). The risk of systematic measurement error was avoided by assessing internal consistency, convergent validity (the extent to which the construct converges to explain the variance of its items) and discriminant validity (the extent to which a construct is empirically distinct from other constructs). To examine the relationships among the variables, we have employed the independent samples *t*-test to assess differences based on gender and location, as well as the Pearson correlation analysis to investigate the relationship with teaching experience. This methodological approach allowed for a comprehensive evaluation of potential disparities and correlations within the data set, ensuring a robust analysis of the factors under consideration.

4. Results

4.1. Model measurement: validity and reliability

We developed PLS-based structural equation modelling to test our hypotheses. The standardised root mean square residual (SRMR) was 0.075, remaining below the threshold (Henseler et al., 2016) and suggesting a good approximate model fit (SRMR <0.08 criterion). In Table 1, Dijkstra & Henseler's rho (ρA) values provide evidence of internal consistency; Dijkstra-Henseler's rho (ρA) was used to evaluate the reliability of the construct scores where the decision criterion is: $\rho A > 0.707$.

The average variance extracted (AVE) index was applied to measure convergent validity (values should be above the threshold of 0.5 in each construct) (Hair et al., 2017). AVE for each construct is between 0.65 and 0.79 (Table 2).

We verified discriminant validity in accordance with the established guidelines (Hair et al., 2011; Henseler et al., 2016), and

Table 1
Measurement of the model constructs and reliability.

Construct (Rho)	Item	Mean	SD	Loading
Challenges of Pandemic (ρA = 0.91)	The pandemic made teaching more complicated for me	4.70	1.75	0.94
	The pandemic made it more difficult for me, to fulfil my teaching tasks	4.37	1.82	0.93
	The pandemic made me face many challenges in teaching	5.22	1.49	0.77
Loss of Teaching Identity (ρA = 0.83)	I have lost a sense of who I am as a teacher	3.08	1.78	0.83
	I have lost an important part of my teaching self	3.81	2.00	0.90
	I can't teach the way teaching should be done	3.85	1.92	0.86
Digital Mastery (ρA = 0.88)	Using digital interfaces enables me to accomplish my teaching tasks more quickly	4.50	1.68	0.74
	Using digital technology improves the quality of my teaching	4.59	1.60	0.85
	Using digital technology makes teaching easier	4.31	1.63	0.75
	Using digital technology enhances my teaching effectiveness	4.46	1.68	0.87
	Using digital technology gives me greater control over my teaching	4.10	1.73	0.81
Successful Role Transition (ρA = 0.75)	The role transition from offline/classic* education to online education was easy for me	4.81	1.49	0.86
	I have become a better teacher because of the digital transition	4.43	1.78	0.69
	It was easy for me to adopt to online education	4.98	1.53	0.90
Teacher-Student Relationship (ρA = 0.88)	I can easily get closer to my students in the digital environment	3.54	1.68	0.86
	I can easily develop a good relationship with my students in the digital environment	3.87	1.77	0.83
	I can break the ice during class more easily in the digital environment	3.02	1.55	0.90
	I can get along with my students more easily in the digital environment	3.28	1.50	0.82

Note: Items were measured with a 7-point Likert scale.
Source: Authors' elaboration

Table 2
Fornell-Larcker criterion.

Construct	Successful Role transition	Loss of teaching identity	Digital Mastery	Challenges of Pandemic	Teacher-student Relationship
Successful Role transition	0.6750				
Loss of teaching identity	0.2743	0.7465			
Digital Mastery	0.2846	0.1761	0.6491		
Challenges of Pandemic	0.2528	0.2355	0.1161	0.7857	
Teacher-student Relationship	0.2074	0.2161	0.2157	0.1065	0.7260

Note: AVE can be found on the diagonal, values under the diagonal are the squared correlations.
Source: Authors' elaboration.

conducted the heterotrait–monotrait (HTMT) test. All HTMT ratios were far below the recommended value of 0.85; the highest value of the HTMT ratio was 0.66, providing evidence of good discriminant validity (Hair et al., 2017). To test discriminant validity further, we checked Fornell and Larcker's criterion, which demonstrated that in all cases the AVE measurement was larger than the squared latent variable correlations (Table 2). All the squared inter-correlations between the constructs are lower than the AVE.

PLS-SEM is a nonparametric statistical model – unlike CB-SEM – and it does not require data to be normally distributed. Following the guidelines (Hair et al., 2017), we deployed nonparametric bootstrapping.

4.2. Structural model and hypothesis testing

The path coefficients (β) of the structural model is presented in Table 3. The values of both the inner and outer Variance Inflation Factor (VIF) are less than 5 (between 1.17 and 3.91), which eliminated the issue of multicollinearity among the variables.

Table 3 and Fig. 3 show that all hypotheses are supported.

The Challenges of Pandemic has an impact on the whole role transition process in the expected direction. It means that Challenges of Pandemic has a direct positive effect on Loss of Teaching Identity ($\beta = 0.49$, $p < 0.001$), and a direct negative one on Digital Mastery ($\beta = -0.18$, $p < 0.05$) and on Successful Role Transition ($\beta = -0.26$, $p < 0.01$), therefore H1a, H1b and H1c are supported.

In H2a-c, Loss of Teaching Identity was hypothesised to affect all other factors of the transition process negatively. The findings indicate that the hypothesised negative effects of Loss of Teaching Identity on Digital Mastery ($\beta = -0.33$, $p < 0.001$), on Successful Role Transition ($\beta = -0.25$, $p < 0.01$) and on Teacher-Student Relationship ($\beta = -0.26$, $p < 0.01$) are supported ($\beta = 0.20$, $p < 0.05$), resulting in a support for H2a, H2b and H2c.

Digital Mastery was hypothesised to improve Successful Role Transition (H3a) and Teacher-Student Relationship (H3b). The results reveal that Successful Role Transition ($\beta = 0.33$, $p < 0.001$) and Teacher-Student Relationship ($\beta = 0.26$, $p < 0.01$) can be significantly improved by Digital Mastery, thus supporting H3a and H3b. H4 suggests that Teacher-Student Relationship is positively affected by Successful Role Transition, which is supported ($\beta = 0.18$, $p < 0.05$).

5. Discussion, implications, and further research

5.1. Discussion

The pandemic made digital transformation faster, seriously challenging teachers of higher education and impacting their whole role transition process. Regardless of the type of learning environment, teachers remain irreplaceable actors in learning (Kalimullina et al., 2021). In a digital environment however, while interacting with students, we have seen that the teachers' roles are typically different from the ones needed in a traditional face-to-face context. In these altered circumstances and learning environment, teachers may have sensed damage to their teaching identity, leading to a sense of loss, therefore they need to redevelop it in the altered spatial

Table 3
Direct Effects in the model.

	β	t-value	p-value
Challenges of Pandemic -> Loss of teaching identity (H1a+)	0.4853***	7.2402	0.0000
Challenges of Pandemic -> Digital Mastery (H1b-)	−0.1794*	−2.1784	0.0148
Challenges of Pandemic -> Successful Role transition (H1c-)	−0.2648**	−3.7880	0.0001
Loss of teaching identity -> Digital Mastery (H2a-)	−0.3326***	−3.8106	0.0001
Loss of teaching identity -> Successful Role transition (H2b-)	−0.2539**	−3.2852	0.0005
Loss of teaching identity -> Teacher-student Relationship (H2c-)	−0.2621**	−3.1147	0.0009
Digital Mastery -> Successful Role transition (H3a+)	0.3366***	5.3191	0.0000
Digital Mastery -> Teacher-student Relationship (H3b+)	0.2583**	2.9185	0.0018
Successful Role transition -> Teacher-student Relationship (H4)	0.1804*	2.2780	0.0115

Note. β = Standardised Regression Weight. ***p < 0.001. **p < 0.01. *p < 0.05.
Source: Authors' elaboration.

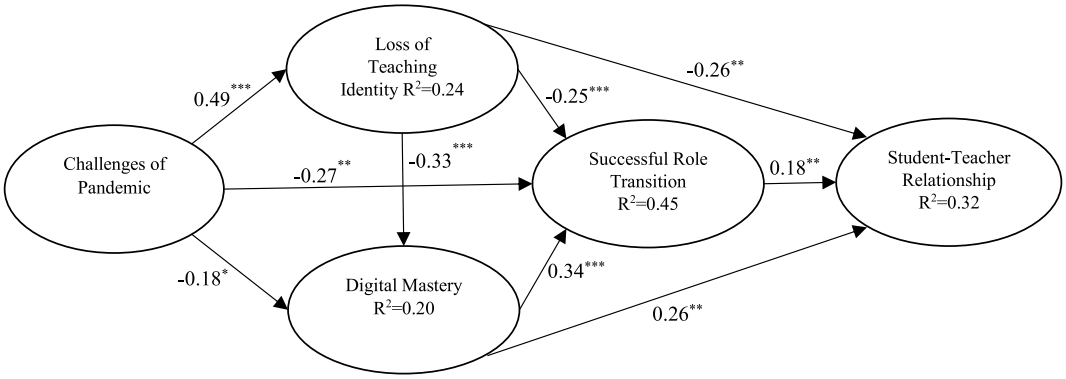

Fig. 3. The structural model and results
Note: all coefficients are standardised (***p < 0.001; **p < 0.01; *p < 0.05).
Source: Authors' elaboration.

environment (Robson, 2018). It may have felt that they had lost a piece of themselves as they were looking for their professional identity in a situation where their former pedagogical skills and practices were not at all or just less effectively working. However, pandemic not only impacted their old identity, but it also endangered the successful development of digital mastery and the transition process itself. Clearly, the pandemic has shocked teachers in higher education who responded negatively to insufficiently or completely unmanaged challenges. As such, it is of utmost importance how the transition process is supported by change management programs, mentoring or other training. If educators are left alone with their identity struggles, role transition could be even more difficult for them, as the Loss of Teaching Identity has a direct negative impact on all elements of role. On one hand, it negatively affects Digital Mastery, as teachers deprived of their identities are only able to gain new digital knowledge to a limited extent or they are not capable of that at all. On the other hand, it negatively impacts Successful Role Transition, as teachers stuck in their old roles cannot easily shift to a new digital role. This keeps them in the neutral zone without the sense of completeness or success.

As demonstrated, Loss of Teaching Identity plays a crucial role in the transition process. To facilitate a smoother and easier change in role, it is essential to mitigate the intensity of the feeling of loss. However, it remains unclear which specific strategies and instruments would be suitable for effectively recovering from this loss. Teachers who are dealing with their loss could also stimulate the more efficient utilisation of digital resources and their ability to adjust to the online setting. Furthermore, the Loss of Teaching Identity negatively impacts Teacher-Student Relationship. The process of redefining and adjusting their professional roles, as discussed in Section 1, poses a hindrance for educators in terms of their ability to prioritise their students and perceive themselves as high-achievers in their work.

Independent sample t-tests revealed no significant differences based on gender. Pearson correlation analysis found no significant relationships between these variables and the studied constructs. Independent sample t-tests showed no differences in the 'Challenges of Pandemic' and 'Digital Mastery' constructs between respondents from Hungarian and foreign universities. However, significant differences were found in the 'Loss of Teaching Identity' and 'Teacher-Student Relationship' constructs, with foreign university instructors experiencing a less severe loss of teaching identity and rating the teacher-student relationship more positively compared to Hungarian respondents. This suggests that Hungarian respondents experienced the digital transformation process more dramatically.

Following the logic of Bridges (1986), we saw that the point of departure of a transition process is always the end of something that results in the loss of identity. Our research shows that in the quickly changed learning environment, teachers successfully taking on new roles can improve their relationships with students. If teachers can figure out which role works best for teaching specific content online, they can strengthen their connection with students. Engeness' studies (2020, 2021) on teachers' identity in the age of digitalization are also in line with our findings. Managing to develop new skills (mastery) could help the process reach success. Digital Mastery in our model enhanced the Successful Role Transition and further improved the quality of Teacher-Student Relationship. This finding may be attributed to the fact that students were exclusively present in the virtual online area during that period. The effective and innovative utilisation of digital tools could thus enhance personal connection and foster the creation of a more suitable learning environment. In this sense our research supports the work of Kakouris (2009) and Liguori and Winkler (2020) as well. It is important to recognise that this is merely a required but not a sufficient condition for an effective teacher-student relationship; there may be additional aspects that also have an impact. However, a successful role transition could raise the chance of building a positive relationship between teachers and their students.

A transition process is successful if it is well-managed and supported during its psychological phases, puts a great emphasis on the phenomenon of loss of identity and provides guidance towards defining the new identity. The environment in this sense enhances the development of new digital skills instead of forcing them, in this way guiding teachers towards a new beginning.

5.2. Implications and further research

Our contribution involves the application of transition theory to the changed academic conditions caused by the COVID epidemic,

resulting in an accelerated digital transformation. Our model facilitated the identification of pivotal elements involved in the process of change. Our research has revealed that measures such as improving infrastructure or enhancing instructors' technology abilities have been given inadequate priority. Many colleges fail to address the psychological consequences that arise from the loss of identity, leaving teachers to handle them on their own. The pandemic has resulted in a loss of identity, which may also occur after any major change. This loss can have adverse effects on the success of the transition process, the acquisition of new skills, and the teacher-student connection. While the process of losing and reconstructing teacher identity is psychologically intricate, it can be effectively facilitated through mentoring or reflective practices, such as sharing best practices.

Our theoretical contribution is twofold. On the one hand, we have operationalized the theory of transition in the context of a digital transformation that was necessitated by a significant change in the external environment. Radical transformations, such as the COVID pandemic and upcoming disruptive technologies, have the potential to become permanent fixtures in modern civilization. On the other hand, we have highlighted the significance of the overlooked loss of identity in the context of investigating digital transition. In addition, we have developed a comprehensive model for investigating the phenomenon of identity loss, which can be applied in future studies on transformative experiences.

Our model is therefore not limited to the pandemic, it can also be used in every case that goes with a radical digital or technological shift as it has an impact on the identity and the roles of the affected people. Besides the context of education, we would suggest further research regarding the self-driving cars' impact on professional drivers, the health care professionals facing more and more digital diagnostical solutions, retail sales assistants challenged by online shopping, or even the digital transformation of our ordinary roles, empowered by generative Artificial Intelligence. We believe that the result of these transformations invariably entails a modified connection, or at the very least, the perceived enhancement of such connections, whether they be between humans or between humans and machines/robots. Leaders and policymakers must prioritise the psychological well-being of individuals in order to effectively navigate transformations. However, the majority of prominent change management models, such as Kotter, ADKAR, McKinsey, and Lewin, fail to incorporate this particular feature. Qualitative interviews can be used to enhance our model by providing further insights into the profound aspects of identity loss and the transition experience for both teachers and students.

5.3. Limitations

The study's exploration of the impact of the pandemic on higher education teachers' role transition and identity is constrained by limitations.

The sample size of 145 respondents limits the generalizability of the findings. The study included a heterogeneous sample, with 20% of the participants being from foreign countries. The intention of this addition was to provide a more comprehensive viewpoint. However, the opportunity to conduct a detailed comparative analysis between the Hungarian and international sub-samples was not fully utilised, despite the wide character of the sample, including the participation of international teachers. In addition, the application of Partial Least Squares Structural Equation Modelling (PLS-SEM), while effective for smaller sample sizes, may not adequately depict bigger or more heterogeneous educational settings. The confirmatory factor analysis of self-constructed questionnaire items is comprehensive, but it is limited to the specific constructs investigated in the study.

These limitations point to the possibility of conducting additional research in a wider range of educational environments with greater scope.

5.4. Conclusion

The conclusion of our study centres on the significant role that the loss of teaching identity plays in the transition process for higher education teachers adapting to a radical technological shift. The study emphasizes the importance of managing this transition effectively, highlighting the need for support through psychological phases and guidance in defining a new identity. The research also underlines the importance of digital mastery in facilitating successful role transition and improving the teacher-student relationship regarding online education. The findings suggest that these factors are crucial for navigating the transition to digital education and maintaining effective teaching and learning dynamics.

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CRediT authorship contribution statement

Ariel Zoltán Mitev: Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **Rita Tóth:** Writing – review & editing, Writing – original draft, Investigation, Conceptualization. **Balázs Vaszkun:** Writing

– review & editing, Writing – original draft, Supervision, Project administration, Funding acquisition, Conceptualization.

Data availability

Data will be made available on request.

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