The Italian Way to the Europeanisation of Teacher Education: An Analysis of Reforms and the Ongoing Experience of Digital Transformation

Loredana Perla[1], Viviana Vinci[2] and Laura Sara Agrati[*3]

∾   The Covid-19 emergency compelled teachers to reshape their teaching approach. Teachers were able to better recognise technologies as a means of interaction and digital transformation as a driver for professional growth. The present paper addresses the Europeanisation of teacher education and professionalisation. This process, which recognises the specific histories and political cultures of national training systems while offering common categories of analysis, nowadays welcomes the challenge of the general digital transition. The aim of the paper is to focus on how the process of Europeanisation of teacher education in Italy is taking place. Two paths are proposed. The first is the presentation of a documentary review study of the latest ministerial reforms that interpret the European recommendations. The second is a description of the DidaSco continuous professional development programme at the University of Bari, which implements European recommendations and national directives through appropriate technological innovations, which have been made even more available since the pandemic. What emerges is the representation of a possible 'Italian way' to the Europeanisation of teacher training, as is being achieved through the opportunities of digital transformation.

Keywords: Europeanisation, teacher education, digital transformation

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Italijanska pot k evropeizaciji izobraževanja učiteljev: analiza reform in trenutnih izkušenj z digitalno transformacijo

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Izredne razmere med pandemijo covida-19 so učitelje prisilile, da so preoblikovali svoj pristop k poučevanju. Učitelji so dobili priložnost bolje prepoznati tehnologije kot sredstvo interakcije in digitalno transformacijo kot gonilo poklicne rasti. Ta članek obravnava evropeizacijo izobraževanja in profesionalizacijo učiteljev. Ta proces, ki priznava specifične zgodovine in politične kulture nacionalnih sistemov usposabljanja, hkrati pa ponuja skupne kategorije analize, danes pozdravlja izziv splošnega digitalnega prehoda. Namen prispevka se osrediniti na to, kako poteka proces evropeizacije izobraževanja učiteljev v Italiji. Predlagani sta dve poti. Prva je predstavitev dokumentarne pregledne študije najnovejših ministrskih reform, ki razlagajo evropska priporočila, druga pa je opis programa stalnega strokovnega izpopolnjevanja DidaSco na Univerzi v Bariju, ki izvaja evropska priporočila in nacionalne direktive z ustreznimi tehnološkimi inovacijami, ki so po pandemiji postale še dostopnejše. Iz tega je razviden prikaz mogoče »italijanske poti« k evropeizaciji usposabljanja učiteljev, ki se uresničuje z možnostmi digitalne transformacije.

Ključne besede: evropeizacija, izobraževanje učiteljev, digitalna transformacija

Introduction

The Covid-19 emergency compelled teachers to redefine and redesign their teaching approach, requiring significant infrastructural and instrumental adjustments, as well as cultural changes (Estermann, 2020; Perla et al., 2021).

Digitalisation played an indispensable role in addressing the urgency and radical change required. Governments worldwide suspended in-person classes, making distance education a key response to the crisis (Williamson et al., 2020). However, the pandemic also revealed certain difficulties and resistance among the teaching community, resulting in a disconnect between administrative and organisational levels and the use of digital tools in teaching (Tømte et al., 2019).

Emergency teaching exposed the fundamental inadequacy of most teachers, who were unprepared for the new challenges and lacked adequate support and guidance (Fernández Río et al., 2022). Teachers need to amalgamate professional, relational, pedagogical and technological proficiencies while choosing appropriate digital tools for content delivery and student interaction (Barberà Gregori & Badia Garganté, 2005). The shift to emergency remote teaching during the pandemic lacked adequate preparation and revealed organisational and infrastructural challenges, as well as digital skills issues for both teachers and students (Dipace & Scarinci, 2021; Hodges et al., 2020).

Integrating in-person teaching with digital tools remains a fundamental and necessary objective, achievable through high-quality technological and pedagogical training for educators (Aguilera-Hermida, 2020; Rapanta et al., 2021).

Digital transformation and teacher education in the post-Covid-19 era

As noted by Perla et al. (2021), the pandemic compelled teachers to redesign their teaching approach, acknowledging the fact that technologies are no longer mere tools for knowledge transmission. Teaching is now seen as a mediated action with high potential for hybridisation. Online learning changes the didactic transposition of in-person teaching, as it transforms space-time organisation, promotes flexibility, and impacts relational dynamics and social interaction, requiring different teaching approaches and skills (Hodges et al., 2020). Despite the initial didactic and organisational challenges, the emergency situation provided a valuable opportunity to rethink distance learning through adaptive and flexible perspectives, offering students wider choices and greater customisation (Huang et al., 2020).

The Covid-19 emergency posed a significant challenge for educational institutions and all of the parties involved, including teachers, students and staff, as they had to adapt to the shift from face-to-face education to online learning, requiring acceptance of and proficiency in technology (Aguilera-Hermida, 2020). Teacher qualification through training activities for methodological and technological updates is crucial to produce multimedia content, manage distance learning and effectively utilise technologies. The role of the teacher has evolved, not only in terms of technological mediation, but also in terms of catering to a diverse student population and focusing on learning outcomes.

Conceptual and theoretical framework

Europeanisation, commonly and outside the social sciences, refers to the growth of a European identity above national identities; in other words, the adoption of a series of European features by a specific nation (Börzel & Risse, 2003). Generally understood as a dynamic process that transforms over time, the effects of Europeanisation are not always predictable, given that it activates multiple interactions with the social and political environment in which it takes place (Featherstone & Kazamias, 2001).

In political sciences, the Europeanisation concept is understood as a process of incorporation – within the national logic of the domestic – of discourse, established and unspoken regulations, procedures, policy paradigms, methodologies, operational approaches, and collectively held convictions and standards originally outlined within EU policy formulation (Moumoutzis, 2011) and specifically related to other sub-processes, such as *construction*, *diffusion* and *institutionalisation* (Radaelli, 2002, p. 108). Referring to multiple interactions that are expressed both vertically and horizontally, socio-political studies on Europeanisation have, over time, opted for a 'circular' approach to empirical research, capable of describing the reciprocal negotiations between policies at the national and European level (Börzel, 2005; Graziano & Vink, 2008). The 'circular' approach is seen as appropriate for investigating 'soft' policy areas (i.e., binding but not subject to compliance through directives and regulations), such as education policy, also in reference to the new governance initiated with the Lisbon Agenda (Radaelli, 2008). With regard to European policy, the term 'European Education Space' encompasses school education, higher education and, consequently, teacher education, which involves the entire spectrum of teacher learning, including initial teacher education (ITE), induction and continuing professional development (CPD) (Symeonidis, 2018). This is included mainly in the wider area of social policy and employment (Paino, 2012).

Research on Europeanisation in the specific field of teacher education investigates Europeanisation not as a stable phenomenon above the system, but as a 'fluid process' (Symeonidis, 2018) that propagates within systems at different levels of policies and practices. Unlike previous studies on the European dimension of teacher education (Caena, 2014), which have focused on initial training programmes, internationalisation and mobility, as well as on the re-contextualisation of policies (Hudson, 2017), the study by Symeonidis (2018, 2021) offers a process analysis of Europeanisation in teacher education from an international and comparative perspective by exploring policies and practices in three EU countries (Austria, Greece and Hungary). Symeonidis's study offers an analysis matrix with indicators and descriptors for further comparative studies (see Table 1). This goes beyond the concept of 'convergence' (Vidović & Domović, 2013) and of 'Europeanness' in teachers' work (Schratz, 2014), but takes up Miller's theoretical reflection on 'resonance' (Miller, 2015) and Stéger's triple level of teacher education description (Stéger, 2014), which defines and utilises teacher competencies, establishing a continuum of teacher professional development and providing support for teacher educators.

Table 1

Analysis matrix of the Europeanisation of teacher education (adapted from Symeonidis, 2018, pp. 101–102)

Categories	
1. Continuum of Teacher Education (CTE)	**1. Initial Teacher Education (ITE)**
	The identification and recruitment of the most appropriate candidates for the profession, encompassing alternative routes
	A harmonious blend of subject expertise, pedagogical skills and integrated periods of hands-on training
	Themes within educational curricula: digital instruction and learning, introspective practice, collaborative teamwork, diversity in education, civic instruction, and roles in school administration and leadership...
	Collaborations with a diverse spectrum of stakeholders in the development and implementation of teacher education initiatives
	Quality assurance and regular evaluations
	2. Induction
	Precisely delineate policy objectives and the roles and obligations of stakeholders, and enhance collaboration among teacher education providers...
	Administered as a unified programme (inclusive of personal, social and professional support)
	Forms the initial phase of a lifelong career development system
	Allocate sufficient financial and temporal resources
	3. Continuing Professional Development
	Can encompass formal, informal and non-formal activities, including mobility and exchange programmes
	Programmes that are pertinent, customised to requirements and focused on practical application
	Mandatory component within school development plans, accompanied by salary or allowance incentives
2. Teacher Competence frameworks (TC)	Develop comprehensive professional competence frameworks founded on learning outcomes, adaptable to various stages of teachers' careers
	Versatile utility across teacher education, professional development, school improvement, recruitment and selection
	Promote the autonomy, empowerment and accountability of teaching personnel, rather than exerting control and disempowering them
3. Role of Teacher Educators (RTE)	Specify the roles and responsibilities of teacher educators
	Encourage the establishment of professional competency frameworks for teacher educators
	Strengthen collaboration between all key stakeholders throughout all phases of teacher education

The matrix assumes a broad concept of the 'continuum of teacher education' – as policy actions including connecting phases and perspectives, teacher learning needs, support structures, career paths, competence levels and connecting teacher development to school improvement (Symeonidis, 2018) – and identifies three analytic categories of the Europeanisation process:

a.   the continuum of the process, articulated in:
   i.   *Selection/Initial Phase* – a high level of selectivity, an attractive salary, the positive image of the teaching profession; balancing subject knowledge, pedagogical competencies and integrated periods of practical training; updating topics such as digital teaching and learning, self-reflection and collaborative working, diversity, citizenship, school management and leadership; splitting theory and practice; partnerships with stakeholders and schools; development of study programmes; development of mentoring systems, quality control.
   ii. *Induction* – related to support of experienced teachers, remuneration for work, additional training, and personalised help and advice; clearly defined and with measurable effects; training teacher educators, including mentors, for their role;
   iii. *Continuing Professional Development* – related to professional mobility opportunities, with some compulsory elements connected to school development plans.
b.   the teacher competence framework – the distinction between "knowledge and understanding, skills and dispositions" (European Commission, 2012, pp. 25–26); developing teacher profiles to align teacher development, performance standards and school needs (OECD, 2005), and articulating distinct career levels tailored to pre-service, novice or experienced educators (OECD, 2005); defining the knowledge and skills expected of teachers (European Commission, 2013, pp. 15–16), employed to foster the agency, empowerment and accountability of teaching personnel.
c.   the role of the teacher educator – teacher educators defined as "all those who actively facilitate the (formal) learning of student teachers and teachers", in the ITE or CPD of teachers (European Commission, 2012, p. 64); competencies to be distinguished into first order (teaching competences) and second order (teaching about teaching, research competences, pedagogy and didactics), for selection and recruitment procedures, as well as for professional development opportunities.

A virtuous circle would be activated between teacher wellbeing, teacher professional development and the ability to positively manage the challenges of today's complexity (Viac & Freser, 2020).

According to the Eurydice Report (2021), the pandemic crisis taught us, above all, that adaptation to an uncertain context is favoured by greater digital

education for students, by the enhancement of hybrid learning contexts and, consequently, by equipping teachers with relevant tools and appropriate skills, such as the ability to design and manage hybrid learning contexts and exploit the digital dimension as teaching resources. However, the pandemic crisis provided other even deeper lessons: that teachers must not feel alone in the face of the challenges posed by complex contexts, otherwise they risk fleeing the profession now deemed as unsustainable (Kelchtermans, 2017); that teachers can be accompanied in self-development and personal empowerment paths through, inter alia, discussions with more experienced colleagues or with diversified tasks, enabling them to share responsibilities in a multi-level career progression framework. Within this framework of an enlarged and multi-level network, digital transformation can be experienced as an opportunity, not just as a challenge, or even a threat (Røe et al., 2022).

A proactive attitude towards teaching professionalism – expressed in a willingness to transform learning environments, combined with multi-level career structures and an ability to partner with wider stakeholders – could be taken as the cornerstone of the profile of the European teacher (European Commission, 2012), and of the very concept of the Europeanisation of teacher education (Symeonidis, 2018).

Purpose of the study

The present study aimed to find early indications useful for a wider description of the Europeanisation process of teacher education in Italy. Since the professional development of teachers is often subject to reforms in Italy, it is appropriate to identify possible elements of Europeanisation to share with the research community and to bring to the attention of policymakers. The following research question was posed:

- *How do the provisions contained in the regulations on initial teacher education in Italy in the last ten years resonate with the characteristics of Europeanisation suggested by research?*

The study also posed a non-directional question that was investigated by comparing the findings of the documentary review study and the DidaSco programme, as the teacher training experience carried out at Uniba:

- *Do the features of the DidaSco programme comply with the criteria of the Europeanisation of teacher training?*

Method

Context

The education and training education system is organised according to the principles of subsidiarity and autonomy. The state has exclusive legislative competence regarding general regulations, such as those on the training of school personnel. Although schools are endowed with a high degree of autonomy (definition of the curriculum, organisation of teaching, etc.), the general direction of the initial training and professional development of teachers is the exclusive responsibility of the state (European Commission/EACEA/Eurydice, 2021).

The present study focused only on the regulation documents related to middle and secondary school initial teacher education, as this specific segment has been subjected to more frequent reviews by governments then the primary school sector. The essential characteristics of the three latest reforms on the training of middle and secondary school teachers are presented below.

- TFA (Tirocinio Formativo Attivo – *Active Training Practicum*). The reform (see Ministerial Decree nos. 249/2010 and 81/2013) provided for an annual postgraduate university path with a highly selective access competition (Ministerial Decree no. 197/2011) at the national level. The path involved the integration of theoretical lessons, didactic-disciplinary laboratories (at university) and practicum (at schools) for a total of 60 university credits in the pedagogical-didactic area and disciplinary didactics. School staff were involved as 'organiser' and 'coordinator' tutors (who work at the university, with total/partial exemption from service) and as 'school' tutors (who work at school, without exemption, as per Interministerial Decree No. 210/2013); the former were selected at universities through a competition, while the latter were individualised by the school on the basis of spontaneous applications. Selection and identification took place on the basis of 'prerequisites and qualifications' as well as a motivational interview. Roles and responsibilities were identified for each type of tutor, including monitoring and course evaluation, but adequate training or forms of recognition in terms of professional development were not envisaged.
- 24 CFU (Crediti Formativi Universitari – *University Training Credits*). Introduced by Decree Law no. 59/2017, then by Law no. 145/2018, the reform did not foresee training path or access selection, but only requirements. It provided for the acquisition – through additional exams to the

academic curriculum – of a further 24 credits in at least three disciplines of four anthropo-psycho-pedagogical areas as well as disciplinary teaching methodologies and technologies. Ministerial Decree no. 616/2017 explains the educational objectives and sets the criteria for universities to recognise valid courses among their already active courses. The training objectives were defined exclusively in terms of knowledge for the transversal area (pedagogical-didactic, psychological, anthropological and technological-didactic) and of skills for the specific areas of the competition classes.

- 60 CFU (Crediti Formativi Universitari – *University Training Credits*). The reform started with Law no. 79/2022 and was applied through Prime Minister Decree (DPCM 4 August 2023). It provides: a. a qualifying postgraduate university course with integrated training activities – theoretical lessons and internships to be carried out in schools, for a total of 60 credits with a prevalence of pedagogical, special teaching and socio--psycho-anthropological areas; b. a university centre with an organisation and coordination function. The reform sets the educational objectives of the course, described in terms of skills and abilities, as well as a profile of professional skills, which are completely original with respect to the typical knowledge-skills-disposition declination (European Commission, 2012, pp. 25–26) and in 'continuous evolution', through, inter alia, the ePortfolio self-evaluation device, as well as minimum professional standards (Annex A). With regard to tutorial figures, the reform partially redefines the tasks but does not change the selection criteria, nor does it provide for adequate training or forms of recognition in terms of professional development.

Research design

A documentary review (see Figure 1) with a horizontal longitudinal design (Bartlett & Vavrus, 2016) was carried out by the DidaSco team of the University of Bari, coordinated by Prof. Loredana Perla.

Figure 1

Longitudinal case-study design
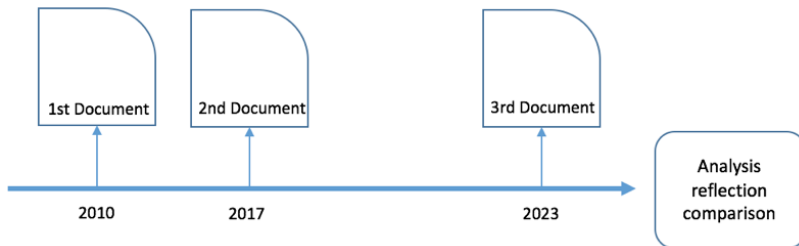
Documents

The document review was conducted in the period April-September 2023 (Bretschneider et al., 2017) on governmental documents, including government decrees, laws and ministerial notes, as primary sources of data. The documents concern the latest ITE reforms in Italy, the only area reformed in recent years. Covering a period of ten years, they are:

1st Document – "Definition of the discipline of requirements and methods for the initial training of teachers in kindergarten, primary school and secondary school of the first and second degree" (*Definizione della disciplina dei requisiti e delle modalità della formazione iniziale degli insegnanti della scuola dell'infanzia, della scuola primaria e della scuola secondaria di primo e secondo grado*, Ministerial Decree no. 249/2010) and "Regulation amending the decree" (*Regolamento recante modifiche al decreto*, Ministerial Decree no. 81/2013). Ministerial Decree no. 249/2010 defines the requirements and methods for the initial training of teachers in kindergarten, primary schools and secondary schools of first and second degrees, outlining the educational standards and procedures necessary for teacher preparation programmes. Ministerial Decree no. 81/2013 modifies Ministerial Decree no. 249/2010, introducing changes to the methods and requirements for the initial training of teachers. It may include adjustments or updates to the curriculum, evaluation criteria or other aspects of teacher preparation.

2nd Document – "Reorganisation, adaptation and simplification of the system of initial training and access to teaching roles in secondary school to make it functional to the social and cultural enhancement of the profession" (*Riordino, adeguamento e semplificazione del sistema di formazione iniziale e di accesso nei ruoli di docente nella scuola secondaria per renderlo funzionale alla valorizzazione sociale e culturale della professione*, Decree Law no. 59/2017) and the related "State Budget Forecast for the 2019 Financial Year" (*Bilancio di*

previsione dello Stato per l'anno finanziario 2019, Law no. 145/2018). Decree Law no. 59/2017 reorganises, adjusts and simplifies the system of initial training and access to teaching roles in secondary schools, with the aim of enhancing the social and cultural value of the teaching profession by improving the training process and ensuring better access to teaching positions. Law no. 145/2018 approves the State Budget Forecast for the 2019 financial year, outlining the government's projected revenues and expenditures for the specified period, including allocations for education and other sectors.

3rd Document – "Definition of the university and academic path of initial training for teachers of secondary schools of the first and second degree, for the purpose of respecting the objectives of the National Recovery and Resilience Plan" (*Definizione del percorso universitario e accademico di formazione iniziale dei docenti delle scuole secondarie di primo e secondo grado, ai fini del rispetto degli obiettivi del Piano nazionale di ripresa e resilienza*, DPCM, 4 August 2023) and the related "Conversion into law, with amendments, of the decree-law of 30 April 2022, no. 36, containing further urgent measures for the implementation of the National Recovery and Resilience Plan (PNRR)" (*Conversione in legge, con modificazioni, del decreto-legge 30 aprile 2022, n. 36, recante ulteriori misure urgenti per l'attuazione del Piano nazionale di ripresa e resilienza (PNRR),* Law no. 79/2022). The Decree of the President of the Council of Ministers (DPCM, 4 August 2023) defines the university and academic pathway for the initial training of teachers in secondary schools, with the aim of aligning teacher education programmes with the objectives of the National Recovery and Resilience Plan, focusing on enhancing teaching quality and effectiveness. Law no. 79/2022 converts into legislation, with amendments, the decree-law of 30 April 2022, no. 36. The original decree-law likely contained urgent measures for implementing the National Recovery and Resilience Plan, and this law consolidates these measures into a legal framework, possibly with additional modifications or provisions.

Secondary sources, such as relevant academic articles and scientific studies, have also been included in order to present a more holistic view of the complex process of teacher education reform (Caputo, 2023; Fiorucci & Zizioli, 2022).

Document analysis

For data analysis, the 'process tracing' method (George & Bennett, 2005) was followed. This method is useful for exploring the descriptive aspect of a case study and identifying potential causal processes through the so-called 'detailed narrative', without a reference theory. The 'narrative' followed in the

present study refers to three phases, corresponding to the three main reforms of teacher education, first described in essential characteristics, then narrowed down through three analytical categories: continuum, teacher competences and teacher educators (Stéger, 2014; Symeonidis, 2018, 2021) (see Table 1).

Table 2 shows the matrix of the comparative and longitudinal analysis of the latest reforms of initial teacher education in Italy. It incorporates descriptors from the Europeanisation of teacher education matrix (see Table 1).

Results

Reading the matrix (see Table 2) reveals the strongly discontinuous framework of the Europeanisation of the initial training of teachers in Italy, both longitudinally and in terms of the categories examined. The first reform, TFA (2012–2015), only partially corresponded to the categories of ITE and RTE; the second reform, 24 CFU (2017–2021) was completely decentralised with respect to these categories; while the current reform, 60 CFU, would seem to respond provisionally to several of the categories, with the exception of selection/recruitment and the role of teacher educators (RTE).

Table 2

Analysis matrix of the Europeanisation of Italian Initial Teacher Education reforms

Categories	European	TFA (2012–2015)	24 CFU (2017–2022)	60 CFU (2023)
1. ITE	Selection/recruitment candidates	High selection	n.a.	n.a.
	Balancing subject knowledge, pedagogical competencies, practical training	Displacement in favour of subject knowledge	n.a.	Displacement in favour of practical training
	Topics: digital teaching-learning, self-reflection and collaboration, diversity, citizenship, school management	Digital teaching-learning, self-reflection	n.a.	All (forecast)
	Partnerships with stakeholders (schools)	High partnership	n.a.	High partnership (forecast)
	Quality assurance and regular reviews	n.a.	n.a.	QA and reviews (forecast)

Categories	European	TFA (2012–2015)	24 CFU (2017–2022)	60 CFU (2023)
2. CT	Frameworks adapted to different levels of teachers' career	n.a.	n.a.	n.a.
	Professional development, school development	n.a.	n.a.	n.a.
	Agency, empowerment and responsibility	n.a.	n.a.	Responsibility (forecast)
3. RTE	Role and responsibilities	Defined	n.a.	Re-defined
	Professional competence frameworks	n.a.	n.a.	n.a.
	Collaboration between actors	Collaboration	n.a.	Collaboration

Despite Europe's increasingly explicit request for professional career paths and a multi-level career progression framework for teachers that are well defined and integrated with school development (European Commission/EACEA/Eurydice, 2021), it seems that Italy is responding slowly and in a fluctuating way. The Italian teacher education system still lacks:

a well-defined framework of professional competences, capable of guiding not only the professional development of teachers but, above all, the selection/training of teacher trainers, within a multi-level career framework. The forthcoming reform – although proposing a redefinition of the teacher competence framework, which is not in line with the European framework – does not involve the entire professional development and career path framework;

a clear strategy for the development of teachers' digital skills. Despite the fact that Europe is requesting that digital skills be integrated into the global framework of teacher skills (Ghomi & Redecker, 2019), the current reform considers digital skills juxtaposed with rather than integrated into the range of other competences areas (e.g., planning, documentation, learning support, etc.) and includes them among the minimum professional standards, rather than as an incentive for professional and career development.

The changing regulatory framework in Italy – in place as of 2022 with the National Recovery and Resilience Plan 2, which provides for the reform of teacher recruitment, published by Law no. 79/2022, converting Decree-Law no. 36/2022 – faces schools and universities with specific and unprecedented responsibilities with respect to access to the roles of teaching staff and initial and in-service training. In particular, the reform envisages the establishment of training centres to promote and coordinate continuing teacher training, with regard to methodological and technological/digital skills.

Discussion

The document review of recent reforms reveals the lack of a system in Italy that can virtuously engage institutions on the subject and modify widespread practices in line with two principles now shared by all European countries:

a)   the idea of teacher professionalism rooted in reflexivity and the development of cultural and methodological-didactic skills aimed at student learning;

b)   partnership with research institutions, primarily universities, for the development of continuous training models.

As emphasised by Maubant and Martineau (2013), teacher training today requires a reconceptualisation of the teacher's relationship with knowledge, methods and the sense of being a teacher. This reconceptualisation needs to be articulated in at least three directions:

a)   The dual process required by the integration of theoretical-practical knowledge by the teacher: it is necessary to organise professional learning as a process of semanticising theoretical knowledge and competence-values. Training for the act of teaching – a kind of knowledge that is non-linear and cannot be fully formalised with the language of demonstrative logic (Eisner, 2002) – calls for a theoretical shift from deductive paradigms to paradigms rooted in the epistemology of practice (Damiano, 2013);

b)   Disciplinary-educational training: promoting the formative aspect of knowledge organised by the teacher for teaching purposes;

c)   Overcoming the gap between 'practical' training and the critical-problematising reflexivity that should support it: effective training should be based on devices that allow the teacher to recover their experience in the situation and activate a posteriori reflection on it, in order to grasp the meaning attributed to it by the actors involved.

A scientific reconceptualisation of teacher training is necessary, starting from the validation of current practices through various types of training devices. By 'training device', we mean the bodily and incorporeal system of institutional and didactic procedures that determine the 'form-context' of training and its functioning, including tools and activities that give rise to participation shaped by how the subject undergoing training interprets the device.

The idea of a new governance of reconceptualised training, based on the aforementioned premises, forms the foundation of the DidaSco (Didattiche

Scolastiche) concept. DidaSco originated in 2010 within the research group[4] active at the Department of Psychological, Pedagogical and Educational Sciences at the University of Bari using a curriculum design approach.

The DidaSco teacher education programme

The DidaSco programme was launched in 2017 as an in-service training project for teachers. In 2024, it will also be tested for initial training following the Prime Ministerial Decree of 4 August 2023, given that it was able to positively validate the hybrid pedagogical model (in-person and online) during the pandemic and post-pandemic phase.

DidaSco considers professional development not only as cultural updating, but also as a strategic lever for teachers, the school environment and the entire national system. The underlying model of DidaSco challenges one-shot training perspectives and professional development approaches, embracing a perspective of "professional learning through change". This approach draws inspiration from adult learning theories, situated cognitive theories and the paradigm of the reflective teacher who takes responsibility for learning to improve the quality of their professional performance (Craig, 2019).

The DidaSco model is based on three lines of research on teacher practices for research and training purposes: analysis of teaching practices (Altet & Vinatier, 2008; Laneve, 2005; Maubant & Martineau, 2011), professional didactics (Pastré, 2011); and studies of teacher thought, self-study and transformative learning (Loughran et al., 2007).

The underlying model of DidaSco is structured around teamwork and is inspired by a multilevel governance system whereby national, regional and local dimensions are closely interconnected, as shown in Figure 2:

- The Ministry of Education, which develops a three-year national plan and establishes the quality standards for teacher training;
- The Regional School Offices, which analyse training needs and manage teachers' professional development requirements;
- The schools themselves, which identify teachers' professional development needs based on their three-year planning (PTOF) and annual improvement plan (PdM);
- Educational institutions, including universities, which provide professional development programmes aligned with the national quality standards and strategic priorities established by the National Framework for Teacher CPD (DM 796/2016) in terms of competencies.

4   Coordinated by Loredana Perla, this research group has a mixed composition, including university professors from various disciplines of universities in Apulia (Bari, Foggia, Salento), school principals and teachers. The group's primary objective is to develop research and training proposals in response to the emerging needs of the Apulian region.

Figure 2
The multilevel governance model of DidaSco (Perla et al., 2017, p. 927)
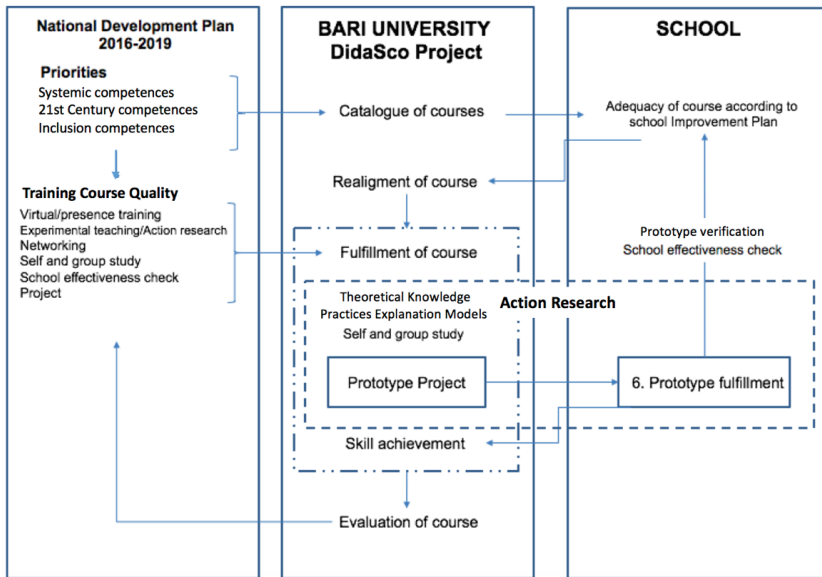

Organisational methodologies and digital transformation of the DidaSco programme

The DidaSco programme has implemented a catalogue with over 150 training courses structured through a dialectic between educational knowledge and disciplinary knowledge resulting from interactions within the research group, which has engaged general didactics experts and teachers from humanities and scientific disciplines since 2010.

Each course is divided into units with different didactic formats, including virtual and in-person training, designing and implementing experimental devices, active research, networking, individual and group study, documentation aimed at assessing school effectiveness, and project work.

The structure of each individual course encompasses theoretical knowledge, research-based training (for prototype experimentation), and documentation/evaluation of the journey. It is predominantly founded on an innovative organisational framework, rooted in a collaborative approach that underscores the significance of partnership between teachers and researchers.

Figure 3

The spiral cycle of reflection (Hammond, 2010)
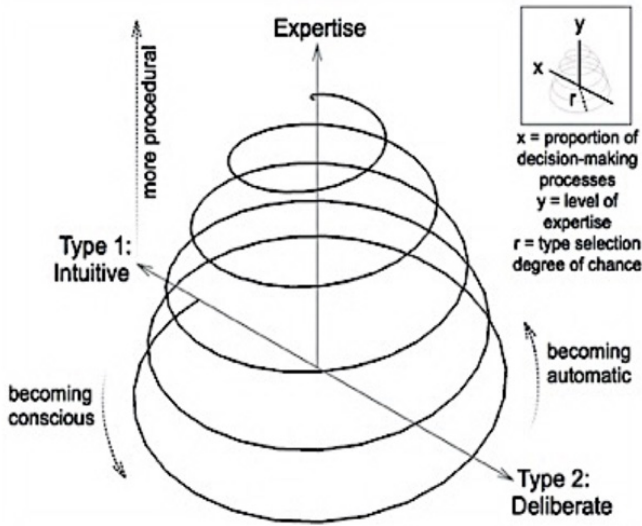
Perla et al. (2021) underscore the pandemic's profound impact on teaching methodologies, necessitating a fundamental redesign. They argue that technology is no longer merely a tool for knowledge transmission, but rather a pivotal element in redefining teaching as a highly hybridised and mediated action. Contrary to viewing online learning as a simple transposition of traditional classroom teaching, it represents a paradigm shift with implications for space-time organisation, fostering greater flexibility and altering relational dynamics and social interactions, thus demanding new teaching approaches and skills. Moreover, amidst the didactic and organisational challenges posed by the emergency situation, there emerges a valuable opportunity to reconsider the modalities of mediation in distance learning through technology. This entails embracing an adaptive and flexible learning perspective capable of providing students with expanded choices and a heightened level of customisation.

The DidaSco project exploited the digital potential for in-service training, as it presented the training offer via a ministerial platform and exploited the features of Moodle to create mixed delivery, through video recordings, webinars, sharing of materials, working groups, etc. During the pandemic phase, the effectiveness of the system was validated especially regarding the participation of teachers, who found an expanded professional community and were thus able to cope with the daily difficulties of distance learning (European Commission/EACEA/Eurydice, 2021).

Conclusion

Over the ten years since its establishment, and in anticipation of the publication of the new DPCM (Decree of the President of the Council of Ministers) on initial training for secondary school teachers, the DidaSco group has focused its reflection on the possibility of strengthening the partnership between universities (and between universities and schools), with an emphasis on research and methodological and technological innovation. How well does the most recent training model align with today's reality? How suitable is it in facing the challenges posed by the contemporary context? And to what extent can artificial intelligence (AI) support education (for example, by rethinking tutorial roles)?

As mentioned in the introduction, the ongoing technological revolution in educational contexts goes beyond a purely instrumental function or achieving greater teaching efficiency; it has an immersive impact, whereby knowledge is continuously deconstructed and reconstructed through new media languages. The gradual rise of artificial intelligence (AI), robotics and learning machines poses significant challenges to contemporary teaching and further emphasises the crisis of traditional transmissive approaches. The use of AI in teaching and learning processes indeed entails a rethinking of the forms of interaction between bodies and virtual objects (e.g., smart wearable devices, avatars, non-player characters), challenging linear and transmissive models (Zhang et al. 2022). It alters the nature of educational interaction, which can be based on immersive, multimodal and multisensory experiences, and rapid access to learning resources, detached from the spatiotemporal barriers of the physical world (Ayiter, 2019; Prieto et al., 2022). This transformation also fosters increased student participation and interaction through roleplaying and/or dialogue exercises in simulated environments (Zhao et al., 2022), as well as adaptive and timely feedback and assessment methods (Díaz, 2020). This necessitates a revision of objectives, practices and learning environments, prioritising students' critical-constructive, elaborative, autonomous decision-making and knowledge restructuring capabilities. This connects to the emergence of new professionalism for teachers (Holmes et al., 2022; Kaplan & Haenlein, 2019), capable of operating in the relationships between individuals and digital devices through generative digital skills to create effective learning contexts. UNESCO (2023, p. 24) summarises the essential qualities of an effective teacher, with emphasis on the qualities needed for teaching remotely and in hybrid mode (Table 3):

Table 3

Qualities of effective teachers before and after the pandemic (UNESCO, 2023, p. 24)

Essential and specific knowledge and skills of the teaching profession	• Pedagogical content-knowledge for all modalities of teaching • Pedagogical skills that respond to all modalities of teaching • Use of educational technology in the classroom and outside it, not only to support face-to-face teaching but sometimes to serve as the most important teaching modality • Skills to identify appropriate technologies to use given content and learning objectives • Curriculum planning and development for face-to face, remote, and hybrid teaching • Content knowledge • Assessment and evaluation in face-to-face, remote, and hybrid settings • Individual learning differences and effective responses in all teaching settings • Teaching practices (supporting the learning process, application of content) • Classroom management, organization, and disciplinary techniques. Emphasis on different techniques of group work, cooperative learning, and organization of learning experiences when teaching in hybrid or remote modes.
Foundational knowledge that informs teaching practices	• Human development and developmentally appropriate teaching skills, with special attention to developmental differences in planning teaching and learning experiences in hybrid and remote formats. • Socioemotional learning and culturally responsive teaching, paying particular attention to (a) helping students engage with others, (b) establishing social interactions, and (c) responding to emotional needs even when in remote or hybrid settings.
Partnerships for effective support of all students	• Establishing and maintaining effective home-school partnerships, both face-to-face and in remote format, to support learners. These partnerships are built on collaboration and deep empathy. • Effective and respectful partnerships with families, communities, public institutions, and other entities to collaborate in the social responsibility of educating learners. • Effective professional partnerships (teachers, principals, psychologists, social workers, health professionals, etc.). Special emphasis on developing networks of teachers and teams to support teaching whether face-to-face, remote, or hybrid.
Personal characteristics of a professional educator	• Professional ethics, with a strong emphasis on ethical behavior and empathy toward communities whether teaching face-to-face, remotely, or in hybrid format. • Understanding of and respect for the diverse social contexts of students, their families, and their communities. • Strong desire to continue learning as expressed in self-initiated professional development, especially to strengthen and practice remote and hybrid teaching skills, evaluation processes, and responses to the socioemotional needs of students.

Digitally enhanced practices expand teaching, allowing for the harmonisation (blended) of face-to-face and online tools and methods. This approach integrates synchronous, asynchronous and self-paced study activities (Anderson, 2008) within active, collaborative and socio-constructivist learning contexts for students. Technologies for training, digitalisation and open educational resources entail a reorganisation of learning content and delivery methods. Open educational resources are available to a diverse and extended audience and provide concrete support to students and teachers. The literature highlights
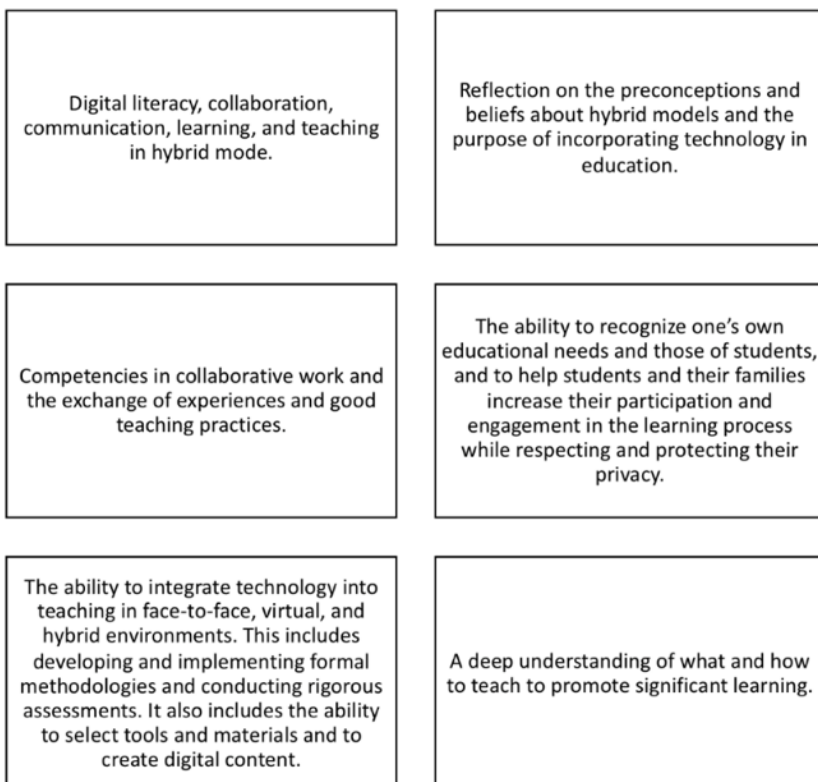
various reasons for adopting technological systems and environments in learning, as they enable the internationalisation of education and democratisation of knowledge (Olivier & Rambow, 2023). They also allow for more flexible and adaptable learning modes, combining formal, non-formal and informal learning contexts, while optimising human and economic resources (OECD, 2017).

It is therefore essential to establish and support communities of teachers who can reflect, develop and experiment with digitally enhanced innovative actions, evaluating their impact. Well-designed, managed and evaluated digitally enhanced teaching allows for the redefinition of space-time categories in teaching actions, mitigates dropouts, enhances the effectiveness of educational pathways, and fosters dialogue and open discussion at national and international levels.

DidaSco proposes a model for remote and hybrid teaching on the basis, inter alia, of what UNESCO has recently suggested for an effective programme of professional development (2023):

Figure 4

The six components of effective professional development for remote and hybrid teaching (UNESCO, 2023, p. 26)

Digital literacy, collaboration, communication, learning, and teaching in hybrid mode.	Reflection on the preconceptions and beliefs about hybrid models and the purpose of incorporating technology in education.
Competencies in collaborative work and the exchange of experiences and good teaching practices.	The ability to recognize one's own educational needs and those of students, and to help students and their families increase their participation and engagement in the learning process while respecting and protecting their privacy.
The ability to integrate technology into teaching in face-to-face, virtual, and hybrid environments. This includes developing and implementing formal methodologies and conducting rigorous assessments. It also includes the ability to select tools and materials and to create digital content.	A deep understanding of what and how to teach to promote significant learning.

Implementing a programme for initial and in-service teacher training based on innovation and digital hybridisation indeed requires specific methodologies for professional learning (Orland-Barak & Maskit, 2017). It is essential to establish research infrastructure and intra-university networks to effectively implement and monitor teacher training actions involving practitioners. Conducting co-research on a theory of teaching professionalism that incorporates pedagogy, didactics and disciplinary knowledge is crucial. Furthermore, conducting surveys on the role of teachers in managing hybridisation will provide valuable insights for the success of the teacher education programme.

Author Contributions

Loredana Perla wrote the paragraphs: Organisational methodologies and digital transformation of the DidaSco Project; Conclusions.

Viviana Vinci wrote the paragraphs: Introduction; Conceptual and Theoretical framework; Discussion.

Laura Sara Agrati wrote the paragraphs: Purpose of the study; Results; The DidaSco teacher education programme.

All of the authors made contributions to the article and have reviewed and approved the submitted version.

Disclosure statement

The authors have no conflict of interest to declare.

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