

Connecting the dots: the role and potential of portfolios in lifelong teacher development in Italy

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(submitted: 18/1/2025; accepted: 8/4/2025; published: 28/5/2025)

Abstract

Lifelong learning is a cornerstone of teacher professionalism, enabling educators to navigate the complexities of a rapidly evolving educational landscape. This paper examines the roles of portfolios, particularly e-portfolios, as tools for fostering reflective practice, professional growth, and the development of competencies across the continuum of teacher education: Initial Teacher Education (ITE), induction, and Continuous Professional Development (CPD). Drawing on established models and recent educational reforms, this position paper examines several critical dimensions that shape the effective implementation of portfolios. Using the Italian education system as a case study, the paper explores how recent reforms and prior experiences can be leveraged to enhance the integration of lifelong portfolios, ensuring continuity and coherence throughout teachers' professional trajectories. Emphasis is placed on the importance of aligning portfolio practices with professional standards, establishing robust training programs, and developing supportive cultural and technological infrastructures. By addressing the opportunities and challenges of embedding portfolios in teacher education, this research contributes to the broader discourse on fostering systemic approaches to professional development and improving the quality of education.

KEYWORDS: Portfolios, Lifelong Learning, Teacher Development, e-Portfolios, Reflective Practice.

DOI

<https://doi.org/10.20368/1971-8829/1136184>

CITE AS

Pettenati, M.C., Martinelli, S., Tancredi, A. (2025). Connecting the dots: the role and potential of portfolios in lifelong teacher development in Italy. *Journal of e-Learning and Knowledge Society*, 21(1), 189-200.
<https://doi.org/10.20368/1971-8829/1136184>

1. Introduction

Lifelong learning has emerged as a cornerstone of teacher professionalism, serving as a critical mechanism for maintaining high-quality education systems and equipping educators to adapt to the complexities and rapid changes of contemporary society. The Council Conclusions on European Teachers and Trainers for the Future (2020/C 193/04) underline the importance of embedding lifelong learning into the career pathways of educators, emphasizing the need for coherent frameworks that seamlessly connect Initial Teacher Education (ITE), induction, and Continuous Professional Development

(CPD). Similarly, OECD studies (Boeskens et al., 2020; OECD, 2024) highlight that achieving such continuity requires addressing systemic challenges, particularly the alignment of multiple stakeholders' interests and policies.

In this context, the concept of the portfolio and more recently the electronic portfolio (e-portfolio or digital portfolio), has gained prominence as a dynamic and versatile tool for fostering professional growth. Initially conceived as a repository for documenting and assessing teacher competencies, portfolios have evolved into comprehensive instruments for reflective practice, self-assessment, and career planning (Zeichner & Wray, 2001). They enable teachers to integrate formal, non-formal, and informal learning experiences, creating a holistic view of their professional journeys. The integration of digital technologies, particularly since the 1990s, has amplified the potential of portfolios, offering platforms for curating teaching artifacts, promoting collaborative practices, and enhancing technological proficiency in the classroom (Harun et al., 2021).

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The Italian education system provides a relevant case study for exploring the implementation of digital portfolios across the continuum of teacher professional development. Italy has made significant strides in institutionalizing the portfolio within all phases of teacher education – ITE, induction, and CPD – positioning it as a core element in recent educational reforms. However, despite these advances, challenges remain in operationalizing portfolios to their full potential and providing coherence and continuity in their use. Achieving coherence across career stages requires addressing cultural, technological, and policy-related factors that influence their adoption and efficacy.

It therefore becomes relevant, at this point, to explore the indications coming from the research in order to collect useful indications aimed at improving the characteristics and use of these tools. Drawing on general models of portfolios established in the literature, we identify critical dimensions that shape their effectiveness. The discussion is further contextualized within the Italian education system, providing insights into the opportunities and challenges of implementing e-portfolios as a systemic tool for professional development.

Global trends, such as the acceleration of technological advancements and the increasing demand for sustainability in education, underscore the relevance of revisiting the portfolio model. As educators navigate a rapidly changing professional landscape, portfolios offer a means to reconcile diverse and evolving experiences, enabling teachers to align their development with broader educational goals. Moreover, the integration of artificial intelligence and advanced digital tools holds the potential to make this process more accessible, efficient, and impactful.

By addressing these themes, this paper contributes to the ongoing dialogue on how portfolios can be leveraged as instruments for lifelong learning, fostering both individual growth and systemic improvements in teacher education.

2. Materials and Methods

This article adopts an argumentative and reflective approach, typical of a commentary or position paper, to examine the role of portfolios in teachers' continuous professional development, with a specific focus on the Italian context. The primary goal is not to provide an exhaustive review of the literature but rather to offer a critical and well-informed perspective, capable of highlighting the challenges, opportunities, and implications associated with using portfolios as a professional development tool with a dedicated focus on the Italian context.

The commentary is an academic genre that allows scholars to stimulate debate through expert analysis and a targeted selection of the most relevant sources. Unlike systematic reviews (Newman & Gough, 2020), which rely on strict criteria for literature selection and synthesis, and narrative reviews (Baumeister & Leary, 1997), which aim to provide a broad and contextualized overview of research, a position paper enables a more focused and interpretative analysis based on an intentional selection of studies, institutional documents, and strategic reports. This approach is particularly well-suited for addressing complex and evolving topics, such as the implementation of portfolios in teacher education, as it allows for the integration of scientific evidence and policy recommendations within a coherent and applicable framework.

The selection of sources was guided by the criterion of conceptual relevance and significance for academic and educational policy debates. We therefore included:

- studies focusing on the application, impact, or evaluation of portfolios in teacher education;
- publications addressing portfolio use in specific professional stages (ITE, Induction, CPD) and their alignment with professional standards;
- research emphasizing portfolio use for reflective practices, professional growth, and assessment mechanisms.

The following sources were included:

- *key academic studies*: studies that have significantly influenced research on portfolios impact in the different stages of teacher education were prioritized. To enrich the perspective, contributions exploring the evolution of portfolio research and emerging challenges, including institutional resistance and difficulties in evaluating the effectiveness of these tools, were integrated.
- *institutional reports and policy documents*: to understand the regulatory framework, strategies adopted and recommendations provided in international education systems, institutional reports from organizations such as OECD (2024) and the European Commission (European Commission/EACEA/Eurydice, 2021) were selected, providing a comparative analysis of teacher education policies across different countries.
- at the Italian level, the *guidelines of the School of Advanced Training of Instruction (SAFI) and ministerial provisions* on the use of portfolios in initial teacher training and the induction period for newly hired teachers were considered.
- *national experiences and portfolio experimentation*: the analysis was enriched by studies and documents describing the implementation of portfolios in teacher education in Italy (Rossi et al., 2017; Pettenati et al., 2024), with particular attention to

their use in the probationary period for newly hired teachers.

These studies allow for an assessment of the extent to which the Italian experience can serve as a reference model for a broader integration of portfolios as a systemic tool for professional development.

Since source selection in a commentary is strategic and targeted, rather than systematic, it is important to clarify that while this is not a systematic review, this contribution integrates key references from academic literature and educational policy reports to provide a solid basis for discussion.

From a theoretical perspective, the construction of the argument involves formulating a central thesis supported by selected evidence, avoiding a descriptive or purely speculative approach.

The analysis revolves around key questions, including:

- what impact portfolios can have in teacher education at different stages of professional development?
- which general model and descriptors can apply to a lifelong teacher portfolio?
- how can the affordances of the Italian teacher education reform and experiences be leveraged to enhance the potential of the integration of lifelong teacher portfolios to ensure continuity and coherence across the professional lifecycle of educators?

Within this framework, the commentary seeks to position itself within the academic and policy debate, seeking to provide an integrative perspective on the potential of teacher portfolios as tools for professional development, while identifying gaps and areas for future research.

3. Results

3.1 Continuity in Teacher Education: an analysis of international policies

Teacher education is a multifaceted field facing several challenges, including disagreements among experts and policymakers, differing priorities regarding pedagogy, subject matter, and student knowledge, as well as a persistent disconnect between theory and practice. Furthermore, there is often a lack of coherence between initial teacher education and continuing professional training. Comprehensive and cohesive policies are essential to address these issues, attract high-quality candidates to the profession, and retain them over time (Musset, 2010). The structure of teacher education programs varies across countries, is influenced by tradition and system-specific characteristics which require careful analysis before implementing reforms. To this end, it is essential to refer to recent international studies, such as those by the European Commission: Directorate-General for Education, Youth, Sport and

Culture (2023), the European Education and Culture Executive Agency: Eurydice (2023), and European Commission/EACEA/Eurydice (2021). These reports provide both comparative insights and country-specific analyses, enhanced by tools like the Teaching Profession section of the Education and Training Monitor Toolbox which allows for effective data visualization and dynamic countries comparison.

In most OECD countries, policy debates and resources tend to concentrate on initial teacher education, emphasizing the skills required at the beginning of teachers' careers and certification pathways, whether through traditional programs or alternative routes. However, continuing professional training has received comparatively little attention (Musset, 2010). Teacher education should instead be conceptualized as a continuum, with intrinsic connections across its stages – initial teacher education, induction, and continuing professional development (CPD). For this to be realized, Musset (2010) identifies a set of policy recommendations, among which it's worth citing the following:

- connect initial education, induction, and continuing training to create coherence and synergy.
- build continuing training on the foundation of initial education to adapt to changes in the teaching environment.
- focus on output-based criteria (skills and competencies) rather than input-based (coursework).
- design programs that address specific school needs and encourage collaboration among teachers.
- use systematic feedback mechanisms to improve teaching quality.
- ensure complementarity between theoretical knowledge and practical experience.
- promote shared responsibility between schools and training institutions to address the theory-practice gap.

The call for the development of educational policies that establish career trajectories for teachers and support lifelong professional development has been reiterated recently in the United Nations Secretary-General's High-Level Panel on the Teaching Profession (2024). This report provides several significant recommendations, including the following (p. 8):

Recommendation 29: Governments should develop policies that outline clear career pathways and allocate resources and personnel dedicated to teacher professional development and lifelong learning within well-defined vertical and horizontal career trajectories.

Recommendation 30: Governments should implement accountability measures and robust

evaluation systems for teaching. These systems should employ methods for assessing teacher performance that take into account the complexity of teachers' roles in diverse educational settings. The ultimate aim should be to enhance the quality of teaching and its impact on learning through formative support and continuous improvement.

3.2 Reflexivity as a core competency of lifelong learning

The OECD document *Policies to support teachers continuing professional learning: A conceptual framework and mapping of OECD data* (Boeskens et al., 2020) highlights reflection as a core competency for teachers, central to effective professional learning and continuous improvement. Reflective practice is characterized as a process that allows teachers to critically examine their methods, evaluate their impact on student learning, and adapt to meet the diverse and evolving needs of their classrooms. The document underscores the importance of fostering teachers as reflective practitioners who engage in systematic inquiry into their teaching practices, thus enhancing their professional autonomy and capacity for innovation. Reflection is presented not only as an individual process but also as a collective endeavor. Teachers are encouraged to collaborate with peers, share experiences, and engage in joint problem-solving to deepen their understanding of effective pedagogical approaches. The document also emphasizes that reflective practice is most effective when embedded in context-based professional learning, which aligns teacher inquiry with the specific goals and challenges of their school environment.

3.3 Portfolio's potential in teacher education

At international level, research on teacher portfolios, particularly in Initial Teacher Education (ITE), has expanded significantly since the 1990s, emphasizing their potential to provide a holistic view of student growth and the development of professional qualities essential for effective teaching (Darling, 2001). Portfolios are recognized for their role in supporting reflection, fostering professional growth, and serving as tools for assessment (Babin et al., 2002). This shift aligns with broader educational paradigms, moving from instructional delivery to creating active, reflective learning environments. Despite their advantages, challenges such as resistance among educators ("portfolio paranoia") and implementation difficulties, including unclear guidelines and perceptions of portfolios as bureaucratic burdens, have hindered their widespread acceptance (Wolverton, 1996; Babin et al., 2002; Shepherd & Skrabut, 2011).

Formative portfolios focusing on teacher development are shown to be more effective in supporting

professional outcomes compared to summative portfolios aimed at accountability (Beck, Livne & Bear, 2005). The need for systematic research to examine the quality of reflection and assessment enabled by portfolios is critical, as argued by Zeichner and Wray (2001). Granberg (2010) highlights e-portfolios as tools for archival purposes, summative assessment, and learning, while also noting barriers such as inconsistent educator understanding and prioritization of summative evaluation. Similarly, Imhof and Picard (2009) stress that portfolios are most effective when supported by clear communication, robust mentorship, and integration into a cohesive training framework.

E-portfolios, as highlighted by Harun, Hanif, and Choo (2021), have transformative potential, fostering reflective, metacognitive, and technological skills while promoting collaboration and professional identity development. However, challenges like insufficient technological support, time constraints, and privacy concerns require comprehensive strategies for their effective integration into teacher education programs.

More recently, Feder and Cramer (2023) emphasized the need for robust quantitative data to assess portfolio effectiveness. Their review of 246 studies reveals that most research focuses on user perceptions rather than measurable outcomes such as professional competencies or reflective writing quality. They thus advocate for further investigation into the direct and indirect effects of portfolios, leveraging innovative methods like computer-based text analysis to address the gap between policy-driven adoption and science-based evidence.

Overall, these studies underscore portfolios' potential to bridge theoretical and practical elements in teacher education, supporting professional development and reflective practices. However, their success depends on clear objectives, institutional and technical support, effective mentorship, and a systematic approach to addressing barriers such as variability in readiness and resource limitations.

The transition from pre-service teacher education to professional teaching contexts highlights the evolving role of ePortfolios. Boulton (2014) emphasizes their value in fostering professional identity, reflective practice, and self-regulation during pre-service training, while also aiding in aligning teaching practices with professional standards. However, their use diminishes during the Newly Qualified Teacher (NQT) phase, shifting focus to personal and professional development. A key challenge lies in the limited adoption of e-portfolios within school systems, reducing their effectiveness during the induction phase. The study underscores the importance of integrating e-portfolios into teacher education and professional development systems, bridging the gap between university training and ongoing professional growth. Further research is recommended by the author to

explore their long-term relevance across diverse educational contexts.

Mokone and Setlalentoa (2023) extend this focus by examining the role of e-portfolios, supported by mentor teachers, in enhancing beginner teachers' self-efficacy. Their findings highlight the effectiveness of e-portfolios in reflecting on teaching practices, personal growth, and professional development. Mentor support is critical, offering feedback and guidance that fosters confidence and professional identity. The study concludes that e-portfolios, combined with sustained mentorship, significantly enhance beginner teachers' efficacy. Again, institutional adoption of e-portfolios as part of induction and professional development programs is recommended, along with further research to assess their long-term impact and potential to create coherence within teacher education systems.

Eventually, studies on the use of portfolios in Continuous Professional Development (CPD) are less frequent and often involve smaller sample sizes and qualitative methodologies.

Hamilton (2018) highlights the role of teaching portfolios in facilitating the transition from classroom teacher to teacher educator. Her self-study emphasizes portfolios' effectiveness in fostering critical reflection, professional identity formation, and scholarship in teaching. Portfolios also bridge gaps between teaching and teacher education, supporting evidence-based reflection and collaborative feedback to drive personal and professional growth. The study underscores the importance of supportive environments for novice teacher educators to navigate institutional barriers and align practices with evolving philosophies.

Chou (2012) examines e-portfolios' impact on technological and vocational schoolteachers in Taiwan, finding significant links between e-portfolio acceptance, computer self-efficacy, and teacher evaluation effectiveness. E-portfolios enhance instructional design and professional growth, particularly for formative evaluations aimed at improving teaching practices. However, robust technology training and support are indicated as essential for effective integration.

Kabeta et al. (2013) explore teaching portfolios in Ethiopian primary schools, noting their perceived benefits for self-reflection, professional development, and student progress tracking. However, barriers such as time constraints, insufficient training, and attitudinal resistance are pointed out as they hinder effective implementation. Recommendations include better mentor training, clear standards, and the integration of self and peer assessments.

Aras (2021) examines portfolios' impact on in-service early childhood educators, emphasizing their role in reflective practice, needs assessment, and professional growth. Portfolios, particularly those including multimedia evidence like video recordings, provide

valuable insights into classroom practices and foster goal-oriented development. They also serve as archival records of professional journeys, motivating teachers by documenting progress.

Espinoza and Medina (2021) study e-portfolios among in-service English teachers, highlighting their role in enhancing technological skills, reflective practices, and collaborative learning. Teachers valued e-portfolios for promoting innovative teaching strategies and showcasing professional growth. Again, challenges include the time-intensive nature of e-portfolio creation and limited technological resources. Overall, e-portfolios are recognized as effective tools for professional development, with the potential to improve teaching strategies and engagement with digital tools.

The adoption and study of teacher portfolios have gained traction in Europe, including Italy, following advancements in the Anglo-Saxon context (Imhof & Picard, 2009). Early Italian research, such as Rossi (2005) and Rossi & Giannandrea (2006), introduced a systemic approach, proposing a general model applied to three portfolio types: student, teacher, and institutional. This innovative perspective highlighted the potential synergies between these portfolios, structured around portfolio construction phases such as collection, selection, reflection, connection, direction, and public presentation. Italian portfolio early applications focused mainly on initial teacher education (ITE) for early childhood and primary teachers.

Giannandrea (2016) built on the multiple experiences to propose a holistic framework for e-portfolio use in lifelong education, emphasizing personalization, flexibility, external scaffolding, and alignment with educational goals. E-portfolios were presented as dynamic tools fostering reflective learning and professional skill development. These principles informed the large-scale implementation of digital portfolios in Italy, particularly for Newly Qualified Teachers, starting with a pilot in 2014/15 (Rossi et al., 2015; Mangione et al., 2016), formalized in 2015/16 (Rossi et al., 2017; Pettenati et al., 2022), and revised in 2023/24 (Di Stasio et al., 2021; Pettenati et al., in press). Over ten years, more than 350,000 teachers have used a digital portfolio during their probation year. This large scale experimentation provided valuable insights into their perceived value and lifelong potential (Pettenati et al., 2024).

Giannandrea (2017) emphasized the role of e-portfolios in fostering a culture of trust in teacher training, highlighting their versatility in documenting experiences, enabling reflection, and supporting professional growth. Challenges such as balancing reflective and evaluative purposes were addressed through strategies like open badges to enhance authenticity. Fanni (2023) conducted a systematic review of Italian literature, analyzing 24 studies from 2001 to 2021. Results confirmed e-portfolios'

effectiveness in promoting reflection, self-assessment, and Continuous Professional Development, but noted their limited use outside the probation year due to technical and resource constraints. Further research was recommended to explore new applications and overcome challenges, reaffirming the pedagogical value of e-portfolios in fostering transformative learning and critical thinking.

3.4 A general teachers portfolio model

In 2005, Pier Giuseppe Rossi (2005) synthesized existing international portfolio models and proposed a new general model (ivi, pp. 69-78) structured into five phases of the portfolio construction process: Collection-Selection-Reflection/Connection-Direction-Public Presentation. This model served as the foundation for large-scale teacher portfolio implementations tested in subsequent years for Newly Qualified Teachers (Rossi et al., 2017). The outcomes of this multi-year research experience informed the redefinition of a new general model, which is centered around Teacher Standards to facilitate self-assessment and the evaluation of competencies essential for professional practice (Di Stasio et al., 2021).

The updated model is organized around four core functions: Documentation, which entails the curated collection of materials evidencing professional development; Reflection and Narrative, where teachers connect selected materials to articulate their competencies and growth; Projection, enabling teachers to assess their skills against a professional competence profile and set future goals; and Publication, which facilitates the sharing of aspects of their professional journey with peers and other stakeholders.

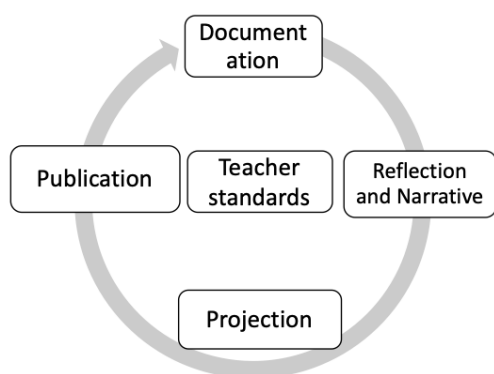


Figure 1 - Teacher's portfolio model (Di Stasio et al., 2021).

This portfolio model is designed to support teachers across all stages of their professional journey, from initial teacher education to in-service training, aligning with a lifelong learning perspective (Pettenati et al., 2025).

At its core, Teacher Standards are central to the portfolio's design, serving a dual purpose: facilitating

the evaluation of teacher performance against established benchmarks and promoting professional self-assessment and planning for future growth. These professional standards act as a cornerstone for defining the competencies, knowledge, and practices expected of teachers throughout their careers (Pettenati et al., 2024). They ensure consistency across various stages of teacher development, providing clear and actionable benchmarks for what educators should know and be able to do. Additionally, they foster a shared understanding among stakeholders – teachers, policymakers, and educational institutions – regarding the quality and expectations of the teaching profession.

The practical application of this general theoretical model requires customization to address the specific needs of teachers at different stages of their professional careers, ensuring the portfolio remains relevant and responsive to their evolving development needs.

Using the elements specified by Rossi (2005, p. 19) as an initial reference, it is possible to develop an enriched taxonomy of the components (Table 1) that should be accounted for to clearly define a teacher portfolio.

At this stage, it is therefore possible to summarize the general and ideal characteristics of the teacher portfolio in relation to the potential and specific needs of the three stages of professional development (Table 2).

3.5 The Portfolio in the Italian teacher education system

Teachers in Italy must complete higher education programs to qualify for teaching positions (Samoilă, et al., 2024). For pre-primary and primary levels, a five-year degree in Primary Education Sciences (LM-85bis) is required, which includes qualifying traineeships. For secondary school teachers, candidates must acquire at least 60 ECTS (CFU) in a structured qualifying training program covering pedagogical, disciplinary, and technological competences. Legislative changes introduced by Law No. 79/2022 revised these requirements, increasing the credits needed for teacher qualification and allowing adaptations for those with prior credits or teaching experience.

The qualification pathway for secondary school teachers involves:

1. obtaining a master's degree (or bachelor's for technical-practical teachers).
2. completing the qualifying training program with 60 CFU or adjusted credits (30/36 CFU) for those with prior experience or credits.
3. passing a national public competition involving written and oral tests and evaluation of qualifications.
4. completing a one-year probationary period (induction), with a final evaluation, to secure tenure. The induction year is regulated by a model defined in Ministry Decree 226/22.

Table 1 - Elements Defining the Teacher Portfolio.

Element	Description
<i>Function</i>	What is the purpose of the portfolio? To evaluate, guide, document, showcase, etc.
<i>Purpose / types of portfolio</i>	E.g. To define and highlight professional competencies; foster critical reflection and continuous growth; showcase achievements and milestones; support personalized learning. Types include professional portfolio, showcase portfolio, learning portfolio, course portfolio, or portfolios for specific areas or disciplines
<i>Artifacts</i>	Teaching documents (lesson plans, evaluations), teaching videos, feedback received, personal reflections, etc.
<i>Selection criteria</i>	E.g. Artifacts selected based on their relevance to learning objectives, competencies to be demonstrated, experiences to be showcased, etc.
<i>Who designs it</i>	E.g. Institutions for initial teacher education, continuous training organizations, research institutions, professional networks, etc.
<i>Who compiles and implements it</i>	Compiled by the individual using it (pre-service or in-service teacher) and implemented with or without institutional support (e.g., a tutor)
<i>Who consults or reviews it</i>	E.g. The person compiling it, mentors, tutors, school leaders, evaluation committees, etc.
<i>Implementation period</i>	Implemented during specific training or professional development periods or continuously
<i>Consultation period</i>	Consulted during evaluation phases, such as career transitions, returning from leave, or mobility processes, etc.

Table 2 - General/ideal characteristics of the teacher portfolio across the three stages of teacher development.

Element	Initial Teacher Education	Induction	In-Service Training
<i>Function</i>	Document and reflect on learning; support the evaluation of emerging competencies	Evaluate professional standards; support the construction of teacher identity	Monitor Continuous Professional Development; promote collaboration and sharing; support career transitions
<i>Purpose / types of portfolios</i>	Learning portfolio, subject-specific portfolio	Professional portfolio, self-assessment portfolio	Showcase portfolio, personalized professional growth portfolio
<i>Artifacts</i>	Lesson plans, internship reports, academic feedback, personal reflections	Actual lesson plans, classroom observations, mentor feedback, evidence of teaching practice, development or reflections on induction experiences	Certifications, educational projects, critical reflections on professional practical experiences
<i>Selection criteria</i>	Artifacts chosen to demonstrate progress in pedagogical and subject-specific competencies	Artifacts chosen to reflect on significant experiences and required standard competencies	Artifacts chosen to demonstrate ongoing improvement in teaching practices and/or the achievement of specific competencies (e.g., roles within the institution)
<i>Who designs it</i>	Universities and academic trainers	Training organizations for newly hired teachers	Continuous training organizations, professional networks, universities, research institutions
<i>Who compiles and implements it</i>	Compiled by student teachers; implemented with support from academic tutors	Compiled by newly hired teachers; implemented with support from mentors or school tutors	Compiled by in-service teachers; implemented through digital platforms and targeted training
<i>Who consults or reviews it</i>	Academic tutors, university professors	Mentors, school leaders, evaluation committees	Colleagues, school leaders, professional accreditation bodies
<i>Implementation and consultation period</i>	Implemented during academic training; consulted at the end of each module/ course, internship, and study program	Implemented during the probation year; consulted for interim and final evaluations	Continuously throughout the career; consulted for promotions professional accreditations

Teachers are employed under private-law contracts, either temporary or permanent, and governed by national collective agreements.

Professional development for teachers in Italy is compulsory, as mandated by Law 107/2015. CPD activities are organized at the school level, often in collaboration with regional networks, and must align with national priorities set by the Ministry of Education. Teachers are entitled to five days off per year for training activities.

As part of the M4C1R2.2 Reform of the National Recovery and Resilience Plan (PNRR), funded by the European Union through the Next Generation EU program, the “School of Advanced Training of Instruction” (Scuola di Alta Formazione dell’Istruzione, SAFI) was established. SAFI is a qualified body created to direct and coordinate the training of all school personnel, promoting uniform and high-quality standards across the national territory. SAFI oversees the planning of training activities for teachers, school leaders, administrative service managers (DSGA), and technical and auxiliary school staff (ATA), ensuring alignment with initial training and respect for educational autonomy. Among its main functions is the promotion of Continuous Professional Development, guaranteeing continuity between initial training and in-service training for tenured teachers, with a focus on high standards and incentivized training.

SAFI also develops guidelines for initial teacher training in collaboration with the National Institute for the Evaluation of Universities and Research (ANVUR) and university training centers, updating training programs and monitoring their effectiveness. It implements a system for monitoring and evaluation to verify the achievement of training objectives, conducting periodic accreditation checks of initial training programs through on-site visits and analysis of licensure exam results. Another SAFI key area is fostering cooperation with schools, promoting collaborative relationships to encourage teachers’ participation in training and educational research through co-design and active engagement. Finally, it collects and analyzes data on the outcomes of teacher qualification exams and probationary periods, transmitting this information to ANVUR for periodic accreditation of training programs.

On December 27, 2023, The Advanced Training School adopted the Three-Year Strategic Guidelines for the Training of School Personnel 2023–2025 (Act No. 3), introducing for the first time the portfolio as a systemic and strategic element in this teacher education segment as well.

3.6 A Comparative analysis of portfolio functions in teacher training in Italy

Based on the top-level documents defined by the Italian Ministry of Education for the three teacher training segments – ITE, Induction, and CPD – the key aspects characterizing the use and purpose of the portfolio can be summarized in Table 3.

4. Discussion and Conclusions

To address the complexity and diversity of teaching as a profession – shaped by formal, informal, and non-formal contributions throughout various career stages – the teaching portfolio emerges as a dynamic and versatile tool. It supports professional growth by fostering critical reflection and documenting significant experiences tied to expected competencies. Additionally, the portfolio functions as an evaluative and developmental instrument, tailored to the specific context and career stage of the educator.

The reviewed studies consistently emphasize the transformative potential of portfolios in fostering professional growth, reflective practices, and teaching competencies. To realize this potential, the following recommendations must be prioritized:

1. Develop clear frameworks and guidance; effective portfolios require explicit objectives, structured frameworks, and alignment with professional standards. Clear definitions of purpose and expected outcomes are essential for consistency and usability.
2. Invest in comprehensive training; teachers, mentors, and supervisors must receive targeted training on critical reflection, self-assessment, and the curation of meaningful artifacts. Training should also focus on equipping mentors – of the different teacher education programs – with skills to provide constructive feedback that enhances portfolio utility.
3. Overcome technological and logistical barriers; robust technological support is vital for e-portfolios, including reliable platforms, privacy safeguards, and equitable access to resources. Institutions must also allocate sufficient time for portfolio creation and review to reduce the burden on educators.
4. Foster collaborative and reflective practices; portfolios thrive in environments that encourage collaboration among educators, mentors, and peers. Establishing structured opportunities for feedback and shared reflection, such as Professional Learning Communities (PLCs), enhances portfolio content and supports professional development. Digital tools, possibly AI-enhanced, could further facilitate reflective documentation and collaboration.

5. Promote acceptance and value; resistance to portfolio adoption can undermine its effectiveness. Institutions must build trust and demonstrate the value of portfolios as meaningful professional development tools rather than bureaucratic tasks. Sharing successful case studies can aid in fostering a positive perception.

The integration of Teacher Standards into portfolio frameworks has the potential to transform them into systemic instruments for lifelong learning. By standardizing different portfolio structures across career stages, they can support a seamless transition from initial education to professional development. Portfolios should enable teachers to document their growth, align their practices with institutional goals, and plan personalized learning paths.

In Italy, significant progress has been made in institutionalizing the portfolio across different stages of a teacher's career.

Recent educational reforms and the collaborative efforts spearheaded by the School of Advanced Training of Instruction demonstrate an alignment with international policy recommendations as for promoting a lifelong learning and reflexivity culture in teachers. However, while the portfolio is utilized in initial teacher education, induction, and CPD phases, its application remains heterogeneous and under-integrated into a coherent professional lifecycle. A more systemic approach is essential to fully leverage its formative and evaluative potential even if its use during the induction phase has already involved over 350,000 newly qualified teachers over the last ten years. This extensive experience has contributed to creating a "habit" of using the tool, gradually overcoming resistance toward this type of practice.

Table 3 - Summary table of the key aspects of the portfolio according to Italian regulations (ITE, Induction, CPD).

Aspect	Initial Teacher Education (ITE - Early Childhood and Primary Education, DM 249/2010)	ITE - Secondary Education (DPCM August 4, 2023)	Induction (Probation Year, DM 226/22)	Continuous Professional Development (CPD, SAFI Act 3/2023)
<i>Portfolio indication</i>	(Not explicitly stated) During the internship a reflective "final report" is indicated (Art. 10, para. 6)	Explicitly indicated during direct and indirect internship (Art. 7, para. 3)	Explicitly indicated to document all the annual probationary period (Art. 11, para. 1)	Explicitly indicated as playing a "systemic" role in documenting continuous professional growth
<i>Definition</i>	An original document integrating theoretical and practical skills acquired (Art. 10, para. 6)	A digital tool for documenting competencies and reflecting on case studies (Art. 7, para. 3)	A formative tool for documenting, reflecting on, and planning future training objectives (Art. 11, para. 2)	A digital platform for compiling certifications and self-assessments
<i>Training purpose</i>	Consolidate and rework acquired skills (Art. 10, para. 6)	Foster critical reflection and active learning (Art. 7, para. 3)	Promote ongoing professional growth and support personalized training planning (Art. 11, para. 2)	Encourage autonomous reflection on professional development
<i>Assessment purpose</i>	Component of the licensure examination (Art. 10, para. 8)	Evaluate competencies acquired during training (Art. 9, paras. 1-2)	Validate skills acquisition for the final interview (Art. 13, para. 2)	Assess the impact and outcomes of professional development programs, career progression
<i>Components</i>	Activities performed, skills acquired, integration of theory and practice	Documentation, reflective analyses, case studies, and an internship journal	Training Curriculum, self-assessments of teachers' standards acquisition, teaching activity records and reflections	Certificates, professional qualifications, skill evidence, self-assessments
<i>Completed by</i>	Interns, under the supervision of tutors and instructors (Art. 10, para. 6)	Interns, with guidance from academic tutors (Art. 7, para. 3)	Probationary teachers, with support from assigned mentors (Art. 11, para. 1)	In service teachers, within structured professional development frameworks
<i>Reviewed by</i>	Examination boards and school-based tutors (Art. 10, para. 9)	Academic and school-based tutors (Art. 10, para. 3b)	Evaluation committees (Art. 13, para. 2)	SAFI and school institutions for feedback and monitoring
<i>Usage period</i>	Applied during internships and the licensure examination	Used throughout direct and indirect internships; consulted for evaluations	Used during all the probationary year and final evaluations	Continuously updated for monitoring, professional growth, and analysis

The widespread exposure to the portfolio has laid a foundation for leveraging this familiarity to accelerate its adoption for continuing professional development (CPD), since teachers are more inclined to embrace a tool they already know and have experienced as effective.

One key factor in the effectiveness of the portfolio lies in the collaborative elements it facilitates, particularly peer discussions and mentor support. These interactions not only enhance the quality of reflection but also provide critical guidance in aligning personal practices with professional standards. However, scaling the use of the portfolio as a generalized tool for all teachers in CPD requires careful consideration of several challenges.

A significant challenge is designing an organizational model that promotes the identification and deployment of internal mentors within schools. While the portfolio has been effectively utilized in universities and schools for small cohorts during the ITE and induction phase, scaling this approach to include the entire teaching community demands a more complex and resource-intensive structure.

The design of the portfolio must strike a balance between completeness and simplicity. Overly complex tools can discourage usage, while incomplete or superficial ones risk being perceived as ineffective. A key aspect of this balance involves the documentation required within the portfolio. It must serve its intended functions without becoming burdensome, ensuring it remains an accessible and practical tool for teachers.

To ensure coherence in teachers' professional journeys, portfolios used in different contexts—initial training, induction, and CPD—should align with the same or analogous Teachers Standards. This consistency prevents confusion and disorientation among teachers who encounter the portfolio at various stages of their careers. Maintaining alignment with professional standards fosters a sense of continuity and supports teachers in understanding how their practices evolve over time.

The experiences gained in Italy provide a valuable basis for extending the use of the portfolio to CPD on a larger scale. However, successful implementation requires addressing the challenges identified above. Policies and practices must focus on creating sustainable organizational structures, designing user-friendly yet comprehensive tools, and ensuring coherence across career phases.

Ultimately, the portfolio's potential as a transformative tool in teacher education lies in its ability to adapt to diverse contexts while maintaining a unified framework grounded in professional standards. By addressing these challenges, the education system can foster a culture of ongoing professional development that supports teachers in achieving excellence throughout their careers.

Further research is needed to explore long-term impacts, scalable models, innovative strategies and AI integration experimentation for portfolio implementation across diverse contexts. By ensuring thoughtful design and robust support, portfolios can fulfill their potential as instruments of excellence in teaching, bridging theory and practice while fostering continuous professional growth. This vision aligns with the idea of the portfolio as

“an unfolding of teachers' understandings about their development as professionals” (Aras, 2021)”

marking a critical step in advancing the quality of teacher education.

Authors' contribution

The authors fully share the conceptual framework, arguments, and conclusions of the paper. However, for the purposes of academic attribution, the sections were drafted as follows: Pettenati wrote sections 1, 3.1, 3.2, 3.4, 3.5, 3.6, and 3.7; Martinelli contributed to section 3.3; Tancredi was responsible for section 2; and all authors jointly wrote section 4.

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