



TEACHER DIGITAL COMPETENCE

# Frameworks and Standards

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# INTRODUCTION

## What is Teacher Digital Competence?

Teacher digital competence (TDC) is the combination of knowledge, skills, and attitudes teachers need to use digital technologies effectively, critically, and safely — for teaching, learning, assessment, and professional growth.

*It goes beyond basic ICT literacy to include pedagogical judgment: knowing when, why, and how to embed technology to improve learning outcomes.*

### Examples

- **DIKSHA Utilization:** Accessing and assigning e-content, lesson plans, and interactive quizzes via the national portal.
- **Multilingual Content Creation:** Designing localized digital worksheets and video explanations in regional Indian languages to bridge the linguistic gap for rural students.
- **Blended Learning Execution:** Combining synchronous video conferencing (like Zoom or Google Meet) with asynchronous communication via WhatsApp study groups for continuous student engagement.

# Policy Foundations for Digital Competence



**A cluster of national policies and standards is converging on the same goal.**

**NEP 2020** The National Education Policy calls for integrating technology at every level of teacher preparation and continuous professional development.

**NCTE Guidelines** The National Council for Teacher Education mandates ICT courses within B.Ed and other teacher-education curricula.

**NPST** NCTE's National Professional Standards for Teachers include a dedicated domain on ICT in teaching, learning, and assessment.

**NDEAR** The National Digital Education Architecture supplies the shared digital infrastructure behind these policies, including DIKSHA.

## 2020

NEP 2020 set the mandate for digital teacher capacity building

## 1 Cr+

Teachers reached through NISHTHA and DIKSHA-linked digital training

# National Digital Teacher Programs



## DIKSHA

The National Teacher Platform hosting e-content, courses, and training modules in multiple Indian languages.



## NISHTHA

Integrated teacher-training programme delivering ICT-integration modules to teachers at national scale.



## PM eVIDYA

"One Nation, One Digital Platform" initiative unifying digital, online, and on-air education channels.



## ICT @ Schools Scheme

Long-running scheme funding computer-aided learning infrastructure in government schools.

# Why Digital Competence Matters Now

## Accelerated EdTech Adoption



Blended and online learning have moved from contingency to permanent feature of most education systems.

## Digitally Native Learners



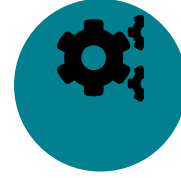
Students arrive with high exposure to technology, raising expectations for how it is used in class.

## Safety & Ethics Demands



Data privacy, misinformation, and AI literacy now sit inside every teacher's remit, not just IT staff.

## Policy Mandates



Ministries and accreditation bodies increasingly require demonstrable digital competence for licensure.

# WHY FRAMEWORKS EXIST

- Give teachers a common language to describe digital skill
- Guide curriculum design for teacher education
- Support self-assessment and targeted professional development
- Inform national policy and certification standards

# The Framework Landscape



**DigCompEdu**

*European Union*



**ISTE  
Standards**

*United States /  
Global*



**UNESCO  
ICT-CFT**

*Global / UN  
Member States*



**TPACK**

*Academic /  
Research Model*



**SAMR**

*Classroom  
Practice Model*

*Five frameworks dominate the field. Each targets a different audience, scope, and level of granularity — explored on the following slides.*

# DigCompEdu



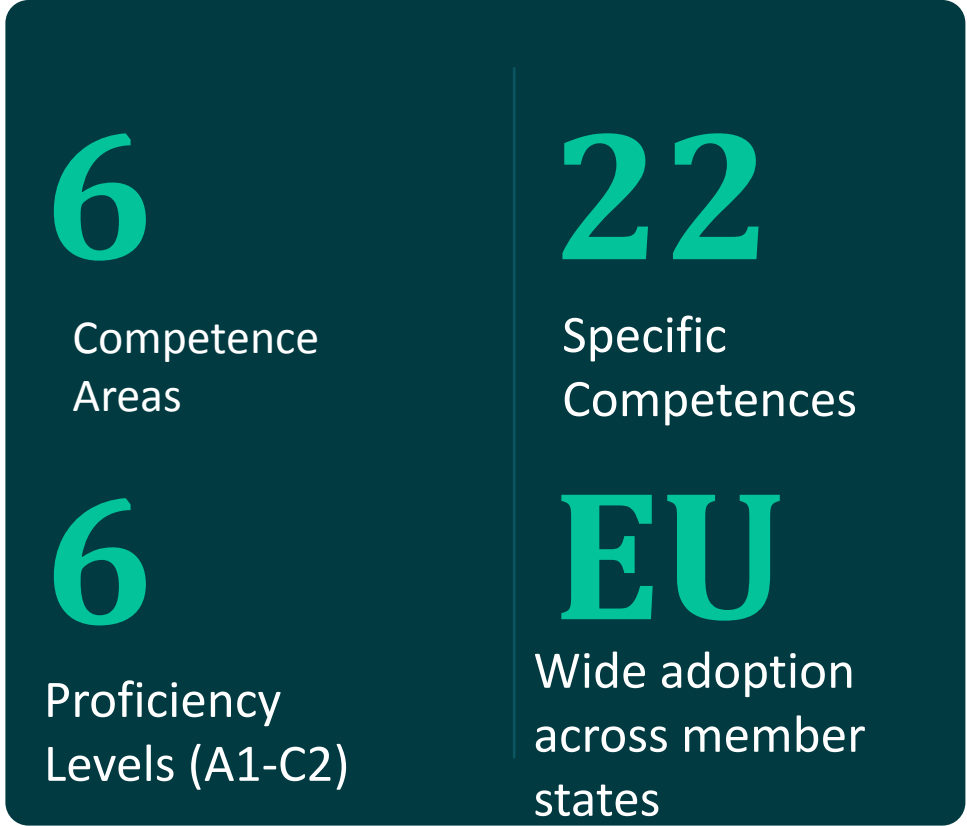
The European Framework for the Digital Competence of Educators, published by the European Commission's Joint Research Centre (JRC) in 2017.

**Purpose** Provide a common reference model for national and regional tools that support teachers' digital competence.

**Structure** 6 competence areas broken into 22 specific competences.

**Audience** Educators at all levels, from early years to higher and adult education.

**Companion tool** DigCompEdu CheckIn — a free self-assessment questionnaire.



# The Six Competence Areas



01

## Professional Engagement

Using digital tech for communication, collaboration & development



02

## Digital Resources

Sourcing, creating, and sharing digital learning materials



03

## Teaching & Learning

Managing and orchestrating digital tools in the learning process



04

## Assessment

Using digital tools to enhance assessment strategies



05

## Empowering Learners

Using digital tech to boost accessibility, inclusion & engagement

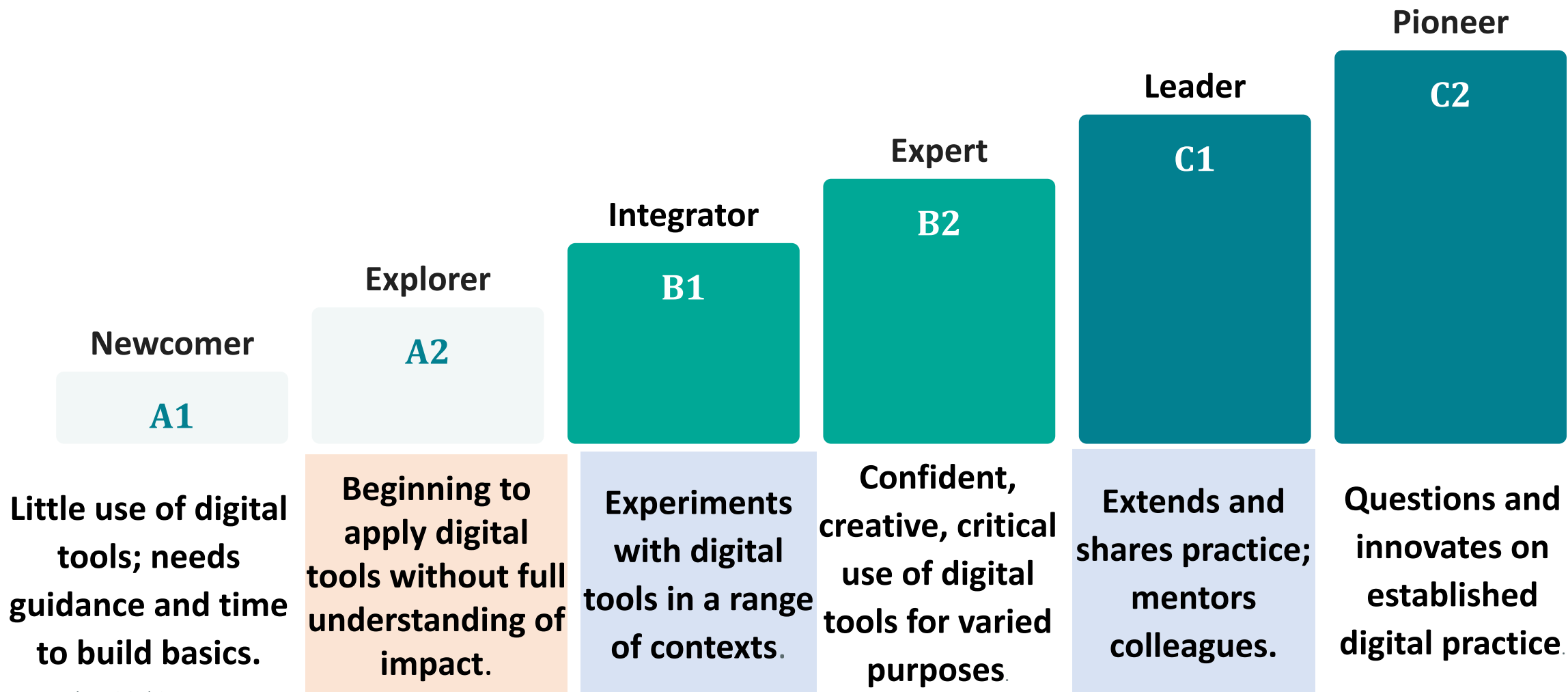


06

## Facilitating Learners' Competence

Enabling learners' own digital competence development

# Six Proficiency Levels



# ISTE Standards for Educators

Developed by the International Society for Technology in Education (ISTE), a U.S.-founded nonprofit whose standards are now referenced worldwide.

**Purpose** Define the skills and pedagogical approaches educators need to empower learners.

**Structure** 7 standards, each with 4 supporting indicators.

**Approach** Role-based — describes the educator as Learner, Leader, Citizen, Collaborator, Designer, Facilitator, Analyst.

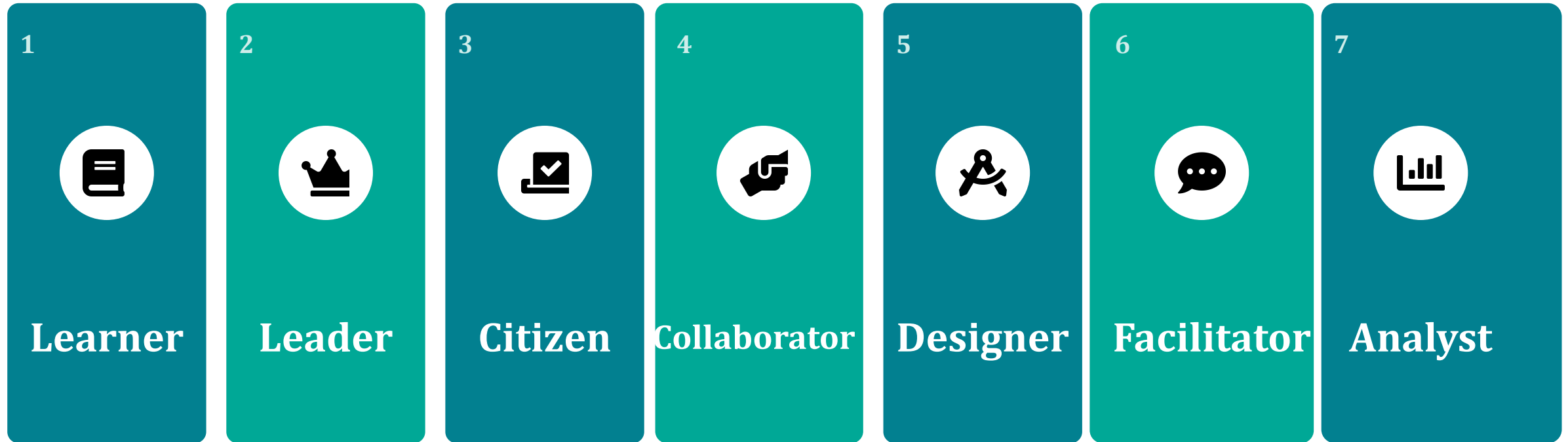
**Companion standards** Paired with ISTE Standards for Students and for Education Leaders.



*“Educators continually improve their practice by learning from and with others, exploring proven and promising practices.”*

— ISTE Standards for Educators, Standard 1: Learner

# The Seven Standards



***Each standard is supported by four specific indicators describing observable classroom practice.***



# UNESCO ICT Competency Framework for Teachers

A global framework (ICT-CFT) designed to help countries develop national teacher ICT-competency policies and standards, aligned to broader education and development goals.

**Purpose** Harmonize teacher ICT standards with national education policy and economic goals.

**Structure** 3 approaches × 6 aspects of teachers' work = 18 modules.

**Audience** Ministries of education, teacher-training institutions, policymakers.

**Distinctive feature** Explicitly links teacher competence to national development goals, not just classroom practice.

# 18

Modules formed from 3 teaching approaches crossed with 6 aspects of a teacher's professional practice

# Three Approaches to Teacher Learning



01

## Knowledge Acquisition

Teachers learn basic digital literacy and integrate ICT into existing curriculum, pedagogy, and school structures.



02

## Knowledge Deepening

Teachers apply ICT to add depth to understanding of key subjects and solve complex, real-world problems.



03

## Knowledge Creation

Teachers model new knowledge-creation skills and continuous, ICT-enabled innovation among learners.

***Each approach spans six aspects of teaching: curriculum & assessment, pedagogy, ICT, organization, and teacher professional learning.***

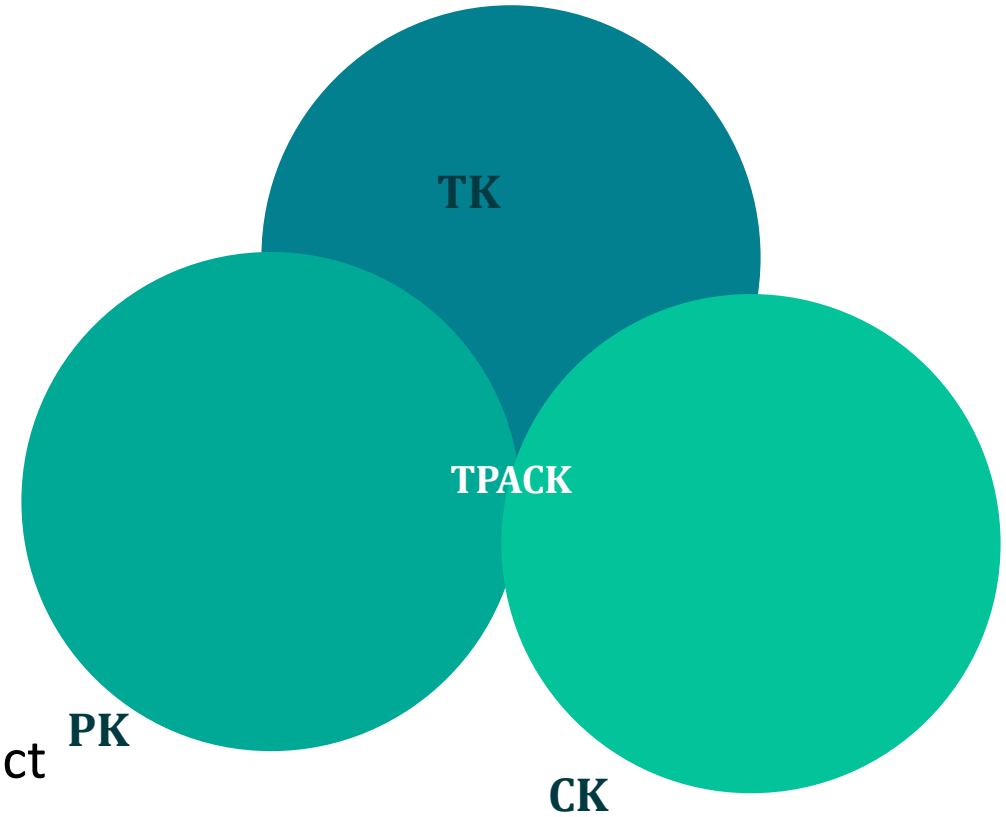
# TPACK: Technological Pedagogical Content Knowledge

TPACK, developed by Punya Mishra and Matthew Koehler, models the interconnected knowledge domains teachers draw on to teach effectively with technology.

**TK** **Technological Knowledge** Understanding of digital tools and how they work

**PK** **Pedagogical Knowledge** Understanding of teaching methods and practices

**CK** **Content Knowledge** Deep understanding of the subject matter itself



*The central overlap — TPACK — represents the integrated understanding needed to teach a specific topic, using appropriate methods, with the right technology.*

# SAMR: A Model for Technology Integration

Developed by Ruben Puentedura, SAMR describes four levels of technology integration, moving from simple substitution to fundamental redefinition of tasks.

## S Substitution

Technology replaces a tool with no functional change.

*Typing instead of handwriting an essay*

## A Augmentation

Technology replaces a tool with functional improvement.

*Adding spellcheck and word count*

## M Modification

Technology allows significant task redesign.

*Collaborative real-time document editing*

## R Redefinition

Technology enables tasks previously inconceivable.

*Publishing work for a global online audience*

# SYNTHESIS

## How the Frameworks Compare

| Framework             | Origin                      | Scope                        | Structure                             |
|-----------------------|-----------------------------|------------------------------|---------------------------------------|
| <b>DigCompEdu</b>     | European Commission (2017)  | Educators, all levels        | 6 areas · 22 competences · 6 levels   |
| <b>ISTE Standards</b> | ISTE, USA (global reach)    | Educators, students, leaders | 7 standards · 4 indicators each       |
| <b>UNESCO ICT-CFT</b> | UNESCO (global)             | National policy & training   | 3 approaches × 6 aspects = 18 modules |
| <b>TPACK</b>          | Mishra & Koehler (academic) | Conceptual / research        | 3 knowledge domains, 7 intersections  |
| <b>SAMR</b>           | Ruben Puentedura            | Classroom task design        | 4 sequential levels                   |



# National & Regional Adaptations

## Spain

INTEF's Marco Común de Competencia Digital Docente adapts DigCompEdu into a national certification scheme.

## Finland

Integrates digital competence into broad teacher-education curricula rather than a standalone framework.

## Australia

Australian Professional Standards for Teachers embed ICT capability across all standard descriptors.

## Latin America

Several ministries adapt UNESCO ICT-CFT modules to align teacher training with national development plans.

***Most national schemes borrow the structure of one global framework while re-weighting priorities to local policy goals.***

# Assessment & Certification



## Self-Assessment Tools

DigCompEdu CheckIn offers a free 22-question survey mapping teachers to a proficiency level.



## Formal Certification

National bodies (e.g. Spain's INTEF) issue certificates tied to demonstrated competence levels.



## Portfolio Evidence

Teachers document lesson artifacts, reflections, and peer observations against standard indicators.



## Peer & Mentor Review

Structured observation by trained colleagues supplements self-report with external validation.

## REALITY CHECK

# Implementation Challenges



### Infrastructure Gaps

Uneven access to devices, connectivity, and reliable technical support across schools.



**Time for Professional Development**  
Competence frameworks demand sustained learning time teachers rarely have.



### Resistance to Change

Comfort with established practice can slow adoption of new frameworks and tools.



**Equity Concerns**  
Framework rollout can widen gaps between well-resourced and under-resourced schools.

# Best Practices for Building Competence



**Continuous, Job-Embedded  
PD**



**Communities of Practice**



**Coaching & Peer Mentoring**



**Hands-On Experimentation**



**Alignment to a Recognized  
Framework**



**Regular Self-Reflection &  
Reassessment**

## LOOKING AHEAD



# Future Trends in Digital Competence

## ● AI Literacy Integration

Frameworks are expanding to cover generative AI use, prompt literacy, and AI ethics in teaching.

## ● Micro-Credentials

Granular, stackable badges are replacing one-time certifications for specific competences.

## ● Personalized PD Pathways

Adaptive platforms recommend individualized development based on self-assessment results.

## ● Competency-Based Licensure

More jurisdictions are tying initial teacher licensure to demonstrated digital competence.

## KEY TAKEAWAYS

# From Frameworks to Practice

- ✓ No single framework fits every context — DigCompEdu, ISTE, and UNESCO ICT-CFT each serve different scopes and audiences.
- ✓ TPACK and SAMR complement policy frameworks by explaining how and why integration decisions matter in the classroom.
- ✓ Sustained self-assessment, mentoring, and time for practice matter more than the choice of framework itself.
- ✓ Emerging demands — especially AI literacy — will keep every major framework evolving over the next decade.