

A Scoping Review of Frameworks in Video Conferencing-Mediated Teaching: Enhancing Digital Competence for Educational Engagement

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Abstract: This scoping literature review synthesises existing digital competence frameworks relevant to teachers and students with a specific focus on their applicability within higher education and the effective, efficient, and pedagogically sound use of video conferencing (VC) systems. While numerous frameworks address digital literacy at the general or pre-tertiary level, few adequately capture the distinct demands of synchronous online teaching and learning in higher education contexts. The review highlights critical gaps between current frameworks and the specific digital competencies required for meaningful video conferencing use, including technical, pedagogical, and collaborative dimensions. Framed within the Erasmus+ KA2 project “*Portable Video Conferencing Toolkits and Online Applications for Engaging Learning Experience Design in Higher Education Classroom (EdViCon)*”, this study identifies core competencies, maps overlaps and distinctions across 10 frameworks, and argues for the development of a targeted competence matrix to guide training design and curriculum development for higher education. The findings offer a foundation for aligning digital skills training with the real-world needs of educators and learners engaged in video-mediated instruction.

Keywords: Review; Competence; Teachers; Students; High Education; Video Conference; Edvicon.

1. Introduction

In an era of increasing reliance on video conferencing (VC) technologies in education, the need to define and support digital competence specific to VC use in higher education remains both important and underexplored (Khalid, Tretow-Fish, & Parveen, 2023; Mansoor, Rozario, Kibria, & Khalid, 2024). While digital competence is widely recognized as critical to human development and intelligence (OECD, 2019), especially in the digital era (van Laar et al., 2017), much of the existing literature and frameworks focus on general digital literacy in primary and secondary education. This scoping review addresses the following research question: What existing digital competence frameworks are relevant for informing the development of targeted VC-related competencies among teachers and students in higher education? To answer this, the review synthesises peer-reviewed articles, institutional reports, and frameworks from national and international sources, with a focus on identifying and categorising digital competences essential for the effective, efficient, and pedagogically sound use of video conferencing systems in higher education teaching and learning. Key references include foundational documents such as the UNESCO Information, Communications and Technology (ICT) Competency Framework for Teachers, the European DigCompEdu model, SELFIEforTEACHERS, and the HeDiCom framework, among others. While overlaps exist, the digital competence needs of higher education teachers and students differ from those of the general public or K–12 educators. This review identifies these distinctions and evaluates how well current frameworks support VC-related practices in higher education contexts. Conducted as part of the Erasmus+ KA2 project “*Portable Video Conferencing Toolkits and Online Applications for Engaging Learning Experience Design in Higher Education Classroom (EdViCon)*,” the review supports the broader goal of bridging the gap between theoretical models and applied pedagogical tools. It contributes to defining learning outcomes and training strategies for enhancing the quality of synchronous digital teaching and learning in higher education.

1.1 Digital Competence, Digital Literacy, and Digital Skills

Digital competence encompasses the set of knowledge, skills, and attitudes required to use ICT and digital media effectively, efficiently, critically, and ethically for a variety of purposes. It involves communication, collaboration, information management, problem-solving, content creation, and knowledge building across contexts such as work, learning, leisure, and civic engagement (Ferrari, 2012, p. 30). It goes beyond basic operational skills, encompassing the ability to communicate, evaluate information, and engage meaningfully with digital environments. A digitally competent individual must also understand legal and ethical implications, data privacy, and the societal impact of technology use. Janssen et al. (2013, p. 480) emphasize that responsible and healthy engagement with digital tools requires not only technical knowledge but also specific attitudes and values. Digital literacy, often used synonymously with digital competence, especially in educational contexts, involves the ability to confidently and autonomously learn, play, socialise, work, and participate civically in digital environments (Nascimbeni & Vosloo, 2019). Mattar et al. (2022) affirm that while these terms are closely related, their use may vary depending on context and audience. In the context of video conferencing (VC), digital competence must consider multiple dimensions: not only skills and literacy, but also the specific demands of online and hybrid learning environments. Both students and educators require tailored digital capacities for VC integration. Importantly, as Ferrari (2012) highlights, mastering tools or applications is only one part of digital competence, which also involves cognitive, ethical, and reflective dimensions. Newman (2008) further advocates for a view of digital literacy rooted in critical thinking. In his model, digital literacy is not just technical proficiency, but also a component of broader information literacy, where critical thinking plays a central role. Thus, meaningful engagement with digital tools, including video conferencing systems, demands more than just operational skills—it also requires analytical, evaluative, and ethical reasoning within a digital context.

2. Related Empirical Work on Competence Assessment

Yelubay et al. (2020) indicate that digital competence (DC) is one of the European Union's eight key competences for lifelong learning. Tretinjak and Anđelić (2016) conclude that there are five digital competence areas, including information, communication, security, problem solving, and content creation. All teachers should become familiar with them to make learning and teaching effective based on the six areas of Digital Competence of Educators (DigCompEdu) Framework (Redecker & Punie 2017). Muammar et al. (2023) adopted the DigCompEdu Framework to investigate the level of digital competences of educators in universities in UAE. In their findings, most faculties are digitally competent in all the six areas pertaining to professional engagement, digital resources, teaching and learning, assessment, learner empowerment, and learner facilitation which help to reflect the extent to which they interact with and use technology in different perspectives of teaching. Pedaste et al. (2023) develop an instrument for assessing Digital Competence for Learning (DCL) and psychometrically validated a DCL assessment test in primary and lower secondary schools, contributing to ongoing discussions about the dimensionality of digital competence (DC) and introducing ideas about reframing the dimensions of DC. They stated that DC is needed for carrying out effective learning and noted DCL as a specialised competence has not been widely studied and therefore relies on DC in the development of the concept and assessment of the instrument for DCL. Three challenges are highlighted in literature (Self-assessment based on Likert- type Scales)

- Students' self-reported levels of competence were not in line with their actual performance (Siddique et al. 2016).
- Educational context, confidence in one's digital abilities is only partially associated with students' actual performance of digital tasks (Porat et al. 2018)
- Trustworthiness of self-reports in information and communication technology (ICT) skills measurement that people with higher ICT skills are more likely to overreport having these skills but decreasing in age (Pałczyńska & Rynko 2021).

Jin et al. (2020) suggest that performance-based digital skills assessment would more likely provide accurate data since competences develop mostly through real-life experiences. Siddiq et al. (2016) and Reichert et al. (2020) conclude that the best way to assess them could be with the help of assignments drawn from real-life situations.

- Assessment of DC or DC on a group of people older than 16 students leaving out primary and lower secondary school students
- Focus on the assessment of only skills or abilities; whether the concept of DC or DCL is unidimensional or comprising several dimensions.

Pedaste et al. (2021) are initiating discussions for a more general discussion on the concept of competence. This can help educators put greater emphasis on areas where students need further improvement. Li (2016) classified digital competence into four levels: beginner, intermediate, higher, and advanced, and specified the ability level of each level in detail

3. Methods

This review was conducted as part of the EDVICON project, aiming to explore existing digital competence frameworks and assessment tools relevant to teachers and students, with a particular focus on competencies required for video conferencing contexts.

A systematic literature search was performed during the second week of January 2024 across multiple academic databases to ensure comprehensive coverage. The databases included IEEE Xplore, Scopus, Web of Science, ERIC, and Google Scholar. The search employed the keyword phrase “digital competence framework”, combined with additional terms such as “video conferencing”, “teacher digital skills”, and “digital literacy assessment” to refine the scope. The search was limited to peer-reviewed journal articles, conference papers, book chapters, and authoritative reports published between 2018 and 2023 to capture recent developments in digital competence.

Inclusion criteria were:

- Publications focused on digital competence frameworks or assessment tools relevant to education, particularly those addressing teacher and student competencies.
- Works that explicitly or implicitly addressed competencies related to synchronous digital communication technologies such as video conferencing.
- Publications available in English and accessible through institutional subscriptions or open access.

Exclusion criteria included:

- Studies primarily focused on general ICT infrastructure or non-educational digital skills.
- Publications without sufficient detail on framework structure or competency descriptions.
- Non-peer-reviewed opinion pieces or blog posts.

3.1 Screening and Selection

The initial search yielded 48 publications. After removing duplicates, two researchers independently screened the titles and abstracts to assess their relevance. Discrepancies were resolved through discussion until consensus was reached. This process resulted in a final set of 14 relevant sources from IEEE Xplore, along with additional key documents from other databases and institutional repositories.

3.2 Data Extraction and Analysis

Key information extracted from the selected documents included framework scope, structure, pedagogical foundations, and explicit or implicit references to video conferencing competencies. The approach aligns with the methodological framework proposed by Perifanou (2021), which emphasizes thematic analysis of assessment frameworks and tools related to digital competence in educational contexts. This analysis was integrated into the broader objectives of the EDVICON project, which aims to develop theoretical foundations and practical resources to support digital skill development in video conferencing environments. In this study, the terms framework, matrix, and tool are used with distinct meanings. A framework refers to a conceptual structure that outlines the domains and dimensions of digital competence. A matrix specifies levels or indicators within a framework, providing guidance for assessment or progression. A tool denotes a concrete instrument or application used to measure or support the development of competence. This distinction supports the study's aim to explore both theoretical models and practical instruments related to video conferencing competencies in educational contexts.

4. Analysis and Synthesis of Existing Competence Matrix for Educational Contexts

The various digital competence frameworks for teachers, students, and other educational roles and contexts were identified and reviewed in this section. At the end of the section, a framework is proposed by selecting and integrating key elements and concepts from the reviewed frameworks, specifically tailored to support the

efficient and effective use of video conferencing systems in live online and hybrid teaching scenarios. The section critically examines the various frameworks to inform this development.

4.1 UNESCO ICT in Education Curriculum for Schools and Programme of Teacher Development: Nine ICT Literacy Units

The UNESCO ICT in Education Curriculum for Schools and Programme of Teacher Development (2002) provides a foundational framework aimed at fostering ICT literacy among teachers through nine dedicated units. However, when evaluated through the lens of contemporary practices such as video conferencing for collaborative teaching and learning, the framework reveals notable limitations in both scope and pedagogical orientation. In terms of scope, the curriculum emphasizes general ICT integration rather than addressing the specific affordances of technologies such as video conferencing platforms. While this broad approach may have been appropriate in the early 2000s, it lacks the specificity needed to support synchronous digital collaboration tools that are now central to remote and hybrid pedagogies. Regarding structure, the framework adopts a linear, skill-based progression across its nine literacy units. Although comprehensive for its time, this structure does not sufficiently address the dynamic and multimodal nature of real-time video conferencing contexts, such as managing learner engagement, fostering co-presence, or ensuring inclusive participation across varying digital literacies. From a pedagogical perspective, the framework is underpinned in a transmissive model of ICT instruction—training teachers to use tools rather than -encouraging critical, reflective, and pedagogically grounded integration. This limits its relevance to practices where pedagogical design, social presence, and collaborative learning theories are the core principle in the effective use of video conferencing for education. In terms of relevance, while the curriculum was instrumental in laying early foundations, its dated conceptualization and lack of direct reference to synchronous online communication underscore the need for substantial revision. To remain applicable in today's educational landscape, the framework must evolve to reflect the demands and pedagogical opportunities presented by modern video conferencing environments.

4.2 The Digital Competence Framework for Primary and Secondary Schools in Europe

The Digital Competence Framework for Primary and Secondary Schools in Europe (Guitert et al., 2020) provides a structured and contemporary model organized around five key competence areas. Its broad scope aligns well with the goals of 21st-century digital education, explicitly encompassing Communication and Collaboration, which is directly relevant to video conferencing practices. In terms of structure, the framework balances technical and pedagogical dimensions, presenting a more integrated vision than earlier models. Pedagogically, it promotes active, participatory learning, aligning well with the collaborative affordances of video conferencing platforms. However, while the framework implicitly acknowledges the use of synchronous tools, it falls short of offering detailed guidance on the pedagogical integration of video conferencing.

4.3 European Framework for Digitally Competent Educational Organizations

The DigCompOrg Framework offers a systemic scope, targeting institutional development rather than individual digital competences. Its structure—composed of seven interrelated elements—supports strategic planning and policy alignment but is less directly applicable to classroom-level practices such as video conferencing. Pedagogically, the framework promotes self-reflection and organisational innovation, which can indirectly support the integration of tools like video conferencing. However, it lacks explicit guidance on synchronous teaching methods, limiting its immediate relevance to educators seeking practical strategies for collaborative, real-time digital learning environments.

4.4 The Digital Competence Framework

Janssen et al.'s (2013) Delphi-based framework presents a broad, cross-sectoral scope, identifying twelve essential elements of digital competence. Its structure, grounded in expert consensus, ensures a comprehensive yet generalized approach. Although pedagogically inclusive, the framework remains conceptual, and offers limited operational guidance for specific educational practices. Consequently, its relevance to video conferencing is indirect, highlighting foundational competencies but lacking concrete strategies for integrating synchronous, collaborative technologies into teaching and learning (Falloon, 2020).

4.5 Competency Framework for the University Bachelor of Technology

Georges and Poumay's (2020) framework, developed for the University Bachelor of Technology in French-speaking contexts, presents a detailed and context-sensitive structure for competency-based education. Its five-step design facilitates alignment between competency definition, authentic situations, and assessment. While the framework accommodates the integration of professional contexts—potentially including video conferencing scenarios—it does not explicitly address the pedagogical or technological specificities of synchronous digital environments. As such, its relevance to video conferencing depends on how educators contextualize the Learning and Assessment Situations to incorporate collaborative and real-time online interactions. In the absence of such specification, the framework offers limited direct guidance for designing or evaluating pedagogical practices based on video conferencing.

4.6 The Teacher Digital Competency (TDC) Framework

Falloon's (2020) TDC framework -adopts an interdisciplinary and holistic scope of digital competence, extending beyond technical skills to encompass ethical, pedagogical, and contextual dimensions. This broader perspective strengthens its relevance to complex practices such as video conferencing, which require not only technical fluency but also collaborative and reflective teaching strategies. The successful implementation of this approach relies on the collective engagement of all teaching faculties to ensure a shared understanding of the digital competencies across disciplines (Falloon, 2020). A unified, coordinated foundation for delivering the framework's goals can be achieved through a shift from the prevalent discipline-based models to a more collaborative and interdisciplinary approach, as advocated by Habowski and Mouza (2014). Structurally, the framework emphasises institution-wide faculty participation, promoting the consistent integration of digital competence across disciplines. Although it does not offer specific guidance on synchronous tools, its emphasis on faculty-wide collaboration and pedagogical coherence creates a strong foundation for integrating video conferencing into teacher education as a shared and reflective practice.

4.7 The HeDiCom Framework: Higher Education Teachers' Digital Competencies for the Future

The HeDiCom framework addresses a significant gap in the field by explicitly focusing on digital competencies for higher education teachers, rather than relying on adaptation from secondary education models. Its four dimensions—Teaching practice, Empowering students, Digital literacy, and Professional development—provide a comprehensive and contextually relevant structure that is both well-rounded and future-oriented. Particularly relevant to video conferencing are the emphasis on teaching practice and empowering students, which implicitly support synchronous and collaborative learning environments. However, while the framework accommodates the pedagogical integration of tools such as video conferencing, it lacks detailed, actionable strategies for their implementation. As such, its value offers a strong conceptual foundation that requires further operationalization through context-sensitive, practice-based guidance within higher education settings.

4.8 Self-reflection Tool Higher Education SELFIEforTEACHERS

The self-reflection tool is based on the European Framework for the Digital Competence of Educators (DigCompEdu, JRC 2017), which comprises 22 competences organised into six areas. The competences are described in six different levels of skills. Additionally, a seventh area—Open Education—has been incorporated, drawing from the OpenEdu Framework (JRC 2016, 2019). The complexity of response options is defined through two elements: (1) an adaptation of the Bloom's Digital taxonomy and (2) progression levels based on the complexity of the proposed activities. While the tool offers a broad and nuanced digital competency model, its direct applicability to synchronous teaching using video conferencing tools remains limited.

4.9 European Framework for the Digital Competence of Educators

The *European Framework for the Digital Competence of Educators* (DigCompEdu) (Redecker & Punie, 2017) offers a comprehensive and structured approach to digital competence, specifically for educators across all levels. Its scope encompasses six key competence areas—from professional engagement to facilitating learners' digital competence—addressing a broad spectrum of digital pedagogical needs. Structurally, DigCompEdu is organized into clear defined competence areas, each divided into progressive proficiency levels with detailed descriptors, enabling both self-assessment and targeted development. This level of granularity supports a nuanced understanding of digital competence that extends beyond technical skills to include pedagogical strategies. Pedagogically, the framework is rooted in constructivist, learner-centered principles, highlighting the

purposeful integration of digital tools to enhance teaching effectiveness, learner engagement, and assessment practices. This orientation is particularly relevant to video conferencing, as the framework explicitly recognizes the role of synchronous communication tools in promoting interaction, collaboration, and formative feedback in digital learning environments. In terms of relevance, DigCompEdu stands out as a highly applicable model for guiding educators in the effective use of video conferencing. It outlines practical competence areas such as managing digital resources, promoting collaborative learning, and ensuring inclusivity in synchronous settings, thus offering a strong foundation for the pedagogical use of video conferencing.

4.10 The DC4LT Assessment Framework (Perifanou, 2022)

The DC4LT Assessment Framework comprises six main categories, each with five concrete subcategories. The six main categories are: 1) Technology, 2) Pedagogy, 3) Assessment, 4) Content, 6) Professional development, and 7) Learners' support. Each category comprises a set of five (5) concrete subcategories. The first category, titled "Technology", outlines three levels of proficiency related to the efficient use of technology in the context of language education. Each level represents a different level of knowledge and skill that language teachers are expected to demonstrate across specific topics such as: 1) digital tools and devices; 2) tools for language education; 3) social media and collaboration platforms; 4) netiquette, and 5) security issues.

The thematic topics addressed across the six (6) DC4LT assessment framework's components are diverse and presented collectively in the following table. While the framework primarily focuses on general digital tools and pedagogical strategies, it does not explicitly address the unique demands of video conferencing (VC) environments. Although the inclusion of social media and collaboration platforms touches on some overlap with VC-related competencies, the framework lacks detailed attention to synchronous communication tools, such as managing virtual classrooms, breakout rooms, or integrating real-time feedback during video-based instruction.

5. Summary

In Table 1, a synthesis table is proposed to extract key insights patterns across the frameworks. The main dimensions discussed are:

- **Scope Variation:** Frameworks range from student-focused to teacher-focused and organizational/policy-focused. Few explicitly target higher education.
- **Structural Complexity:** Most frameworks use multi-dimensional structures with defined competence areas. Some provide progressive levels and detailed descriptors, while others remain conceptual or offer flexible guidelines.
- **Pedagogical Emphasis:** Many frameworks emphasize learner-centered, constructivist approaches, collaborative teaching, and professional development. However, few integrate detailed pedagogical strategies for synchronous tools.
- **Video Conferencing Relevance:** Explicit guidance on video conferencing is limited.

Table 1: Summary of Synthesis

Framework	Scope	Structure	Pedagogical Underpinnings	Relevance to Video Conferencing
UNESCO ICT Curriculum (2002)	Secondary education, teacher development	9 ICT literacy units, curriculum + PD program	Focus on curriculum alignment and teacher capacity building	Implicit; general e-learning and distance education, limited direct focus on video conferencing
Digital Competence Framework for Schools in Europe (Guitert et al., 2020)	Primary and secondary students	5 competence categories	Emphasizes active learning, communication, and collaboration	Includes communication/collaboration, indirectly supporting video conferencing
DigCompOrg Framework (Kampylis et al., 2015)	Educational organizations and policy	7 elements, 15 sub-elements, systemic	Organizational self-reflection and innovation	Supports digital integration broadly; no explicit focus on video conferencing

Framework	Scope	Structure	Pedagogical Underpinnings	Relevance to Video Conferencing
Janssen et al.'s Digital Competence Framework (2013)	Broad cross-sectoral	12 elements based on Delphi study	Conceptual, expert consensus	Foundational competences; no direct strategies for video conferencing
Competency Framework for Bachelor of Technology	Higher education, professional contexts	5-step competency drafting with learning/assessment situations	Contextual, authentic professional practice	Potential for inclusion of video conferencing via LAS; no explicit mention
Teacher Digital Competency Framework (Falloon, 2020)	Teacher education, interdisciplinary	Conceptual, faculty-wide engagement	Collaborative, interdisciplinary, ethical focus	Supports collaborative teaching; video conferencing relevance through pedagogical integration
HeDiCom Framework (Tondeur et al., 2023)	Higher education teachers	4 dimensions: teaching practice, empowerment, literacy, PD	Practice-focused, future-oriented	Implicitly supports synchronous tools; no detailed video conferencing guidance
SELFIE for Teachers (Higher Ed)	Self-reflection in higher education	Digital competence self-assessment tool	Emphasizes self-reflective practice and improvement	Indirect; supports evaluation of digital practices, possibly including video conferencing
European Framework for Digital Competence of Educators (DigCompEdu) (Redecker & Punie, 2017)	Educators at all levels	6 areas, progressive levels, detailed descriptors	Constructivist, learner-centered, pedagogical integration	Explicitly addresses video conferencing as a tool for collaboration and engagement
DC4LT Assessment Framework (Perifanou, 2022)	Learning technologies and training	6 areas	Focus on competence measurement and validation	No explicit focus, but applicable to digital teaching tools including video conferencing

Among the ten competence frameworks reviewed, the Digital Competence Framework for Primary and Secondary Schools (Guitert et al., 2020) provides a modern and relevant basis for integrating video conferencing systems in teaching and learning; however, it lacks explicit pedagogical strategies for effective implementation. The UNESCO (2002) framework remains historically significant but is now clearly outdated in addressing contemporary digital teaching needs. DigCompOrg and Janssen et al. (2013) offer valuable conceptual approaches but provide limited practical guidance for online teaching. The framework by Georges and Poumay presents a strong competency-based model but requires suitable adaptation to address the pedagogical and technological specificities of video conferencing systems. Notably, the DigCompEdu framework stands out as the most comprehensive and applicable for guiding the effective use of video conferencing. It directly addresses synchronous teaching, collaborative learning, inclusivity, and practical pedagogical strategies. The Teacher Digital Competency (TDC) and HeDiCom frameworks also offer theoretical and pedagogical foundations, particularly within higher education contexts, yet both require further operationalization to fully support synchronous, video-based learning environments. SELFIEforTEACHERS is well-suited for self-assessment and reflection but lacks actionable guidance, while DC4LT is obviously structured and context-specific for language education, though it does not sufficiently address the unique demands of video conferencing-based instruction.

6. Conclusion

Based on the documents highlighting the challenges and needs related to video conferencing skills for teachers, the study proposes a competence matrix specifically tailored for video conferencing. The researchers have developed a EDVICON framework (Campillo-Paquet, Impedovo, & El Hamaoui, 2024; Salha, Impedovo, & Khalid, 2025), structured in three main dimensions:

- **Technical Skills:** This competency refers to the educator's ability to proficiently operate, configure, and manage video conferencing platforms (e.g., Zoom, Microsoft Teams), tools, and supporting technologies. It covers not only basic platform navigation but also advanced features such as breakout room facilitation and interactive tool usage. Additionally, it includes the integration of

these skills into pedagogically sound practices that support online and hybrid learning environments.

- **Usage of Equipment and Applications in Video Conferencing.** This competence refers to the educator's ability to effectively operate and maintain essential hardware and software tools necessary for delivering high-quality synchronous online instruction via video conferencing platforms. It encompasses technical fluency in managing both the physical and digital tools for a virtual classroom environment.
- **Pedagogical Practices in Video Conferencing-Based Instruction.** This competency refers to the educator's ability to design and facilitate pedagogically grounded learning experiences using video conferencing tools. It involves the application of diverse educational approaches that harness the strengths of synchronous digital environments to promote engagement, collaboration, critical thinking, and learner autonomy.

Table 2 shows the competence framework proposed for a video conferencing system.

Table 2: Competence Framework for Video Conferencing System

Category	Competency	Description	Skills/Tools Required
Technical Skills	Platform Navigation	Proficiency in navigating video conferencing platforms.	Menu navigation, feature usage, settings adjustment
	Technical Setup	Setting up necessary technical components for video conferencing.	Microphone, camera, internet connection setup
	Distraction Management	Managing and eliminating distractions during video conferences.	Background control, muting participants, notifications management
	Background Management	Managing virtual backgrounds.	Uploading/selecting virtual backgrounds
	Breakout Room Management	Creating and managing breakout rooms.	Setting up and monitoring breakout rooms
Equipment Usage	Essential Hardware	Regular use and maintenance of necessary hardware.	Computer, microphone, webcam, external speaker
	Supporting Software	Proficiency in using supporting software for presentations and document sharing.	Microsoft PowerPoint, Word, Zoom, Webex, Google Meet
	Additional Tools	Use of additional tools to enhance video conferencing.	Auto-zoom cameras, extended screens, stylus pen
Pedagogical Practices	Constructivist Approach	Encouraging interactive and engaging activities for students to construct their own understanding.	Interactive activities, engagement strategies
	Collaborative Approach	Facilitating teamwork and collaborative projects.	Breakout rooms, group discussions
	Integrative Approach	Integrating multimedia resources and tools for comprehensive learning.	Multimedia integration, resource management
	Inquiry-Based Approach	Encouraging questions and research for deeper understanding.	Inquiry-based activities, research facilitation
	Reflective Approach	Providing opportunities for reflection on learning experiences and outcomes.	Reflective activities, feedback sessions

In conclusion, this document offers a comprehensive analysis of the challenges and needs related to the integration of video conferencing tools in teaching practices. The in-depth analysis of the study framework has highlighted the pressing need for a competency matrix to support the effective adoption of video conferencing tools, posing a major challenge for teachers in mastering the associated skills. Current practices often assume a baseline level of digital literacy among the teaching staff. However, the proliferation of competency frameworks in recent years indicates a growing recognition of the need for structured training, particularly for the optimal use of video conferencing in distance and hybrid learning environments. Importantly, self-directed exploration of these tools necessarily translates into the mastery required for effective pedagogical application, which underscoring the value of structured, targeted professional development. To foster this development, it is essential for teachers to be able to assess their current practices against the expectations outlined in a clearly

defined framework. In addition, the literature review reveals that existing institutional frameworks lack concrete, practical applications for educators. This disconnect calls for the operationalization of these frameworks in a way that directly supports teaching practice. In response, the development of a competency matrix specifically focused on video conferencing emerges as a relevant and timely initiative. Such a matrix can provide educators with a clearer understanding of the skill levels required. By embracing these tools, educational institutions can empower teachers to fully leverage video conferencing technologies in delivering high-quality, interactive, and engaging remote instruction.

Ethics Declaration

The ethical clearance was not required for the research.

AI Declaration

AI tools were not used the creation of this paper.

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