Research Article

Teacher Competence and 21st Century Challenges: A Critical Analysis of Existing Teacher Competency Frameworks

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Abstract

In today's fast-paced world, education is critical in empowering students to take on new challenges. Every aspect of human life (economically, socially, and technologically) is fast changing in the twenty-first century. Teachers need to visit their competence profiles for 21st century challenges. Teachers in the twenty-first century must possess both topic mastery and the ability to integrate technology into their lessons. The importance of teacher development programmes cannot be overstated. Teaching-learning has shifted from a teacher-centered, lecture-based environment to a student-centered learning environment as a result of developing technologies. Now the attention has shifted to twenty-first-century learners and the knowledge and abilities that our pupils will require in the future. But what about the educators? What instructional skills will teachers in the twenty-first century require to prepare our students? What are the skills that will distinguish them from the teachers in the past? Are our teachers competent enough to face the 21st century classroom? The purpose of this paper is to analyse the existing teachers' competency frameworks to bring out the core the competencies required by teachers for effective teaching and examine the 21st century classroom settings and problems in order to achieve desired improvements in teachers' professional development.

Keywords: Professional development, Teacher competence, Teacher training, 21st century skills

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Introduction

Teaching in the twenty-first century is a unique phenomenon; learning could never have happened the way it does now-all over the place, all the time, on any topic, endorsing any imaginable learning style or strategy. As Kress (2000) correctly points out, the previous era's emphasis on education was for stability, while the present and future needs are for education for instability. Awareness and information are expanding at such a cosmic pace in this age that no one can learn anything about every subject, what seems obvious today may be proven false tomorrow, and the jobs that students will have after graduation may not yet exist. As a result, students should be taught how to process and use data, as well as how to learn adaptability skills that they can apply in their everyday lives and simply teaching them facts and ideas without teaching them how to apply them in real-life situations is no longer sufficient. To meet the demands of the twenty-first century, teachers should be equipped with a diverse set of skills. Teachers must embrace and adapt innovative instructional approaches, as well as inspire responsible learners. In addition to the competency profiles (Caena et al. 2019), English instructors must control adult minds, their attitudes toward the subject, and their understanding of the subject. This shift in perspective stresses on teachers' professional growth to remain updated to the ever-changing needs of their students. Thus, analysing the existing competence framework and aligning them to 21st-century challenges as well as identifying the expectations of education practitioners will serve many objectives at various levels of education systems to help them understand what aptitudes they have acquired and what more is needed. Technology is changing. The nature of work is changing, and there is a need to prepare the faculty to bring disruption in education. Tomorrow's jobs don't exist today. So, educational organisations should focus on life-long learning (Anita & Prajna, 2020).

Problem Statement

Teachers teaching English in engineering colleges are generally freshers who have a minimum of Master's degree, M.Phil. or a very few with a Ph.D. degree in English literature. Language instructors however well qualified and prepared in language skills yet need pedagogic competency and a specialized knowledge of learner's area of specialization. Teachers teach English as a subject for comprehension notwithstanding students' needs, and their degrees of proficiency. The teachers need to understand that the students now in this 21st Century can't be "taught" they can only be helped to learn (Jennifer Rita Nichols, 2019). And this places educators in a troublesome position. In addition to the fact that we expect them to have a profound and expansive comprehension of the subjects they instruct, and to satisfactorily set up their students for 21st century challenges; we likewise anticipate that they should be energetic, merciful and insightful, and to guarantee that students feel esteemed and included in a collaborative learning environment (OECD Education and Skills Today, 2018).

Frameworks for 21st Century Competences

In this study, well-known frameworks for 21st century competences were identified and selected for in-depth analysis.

UNESCO ICT CFT

UNESCO, CISCO, INTEL, ISTE and Microsoft in partnership revealed a version three update of the United Nations ICT competence Framework for teachers in 2018.The framework was created by crossing three approaches to ICT integration in education (Knowledge Acquisition, knowledge Deepening and knowledge Creation) with six aspects of the education system:

- Understanding ICT in Education Policy

- Curriculum and Assessment, Pedagogy

- Application of Digital Skills

- Organisation and Administration

- Teacher professional Development

The ICT CFT was viewed from its beginning as a lively document to be evaluated often supported by feedback and constant changes within the world of technology to keep it current and relevant. The United Nations Agency Education 2030 Agenda could be a shared international vision and commitment that anchors the right to education. The agenda makes no exemption and is applicable to all or any countries. notably, it takes under consideration the standard of education, specializing in enhancing effective and relevant learning. The Sustainable Development Goal four (SDG4) of the 2030 Agenda defines an alternative international education agenda to " guarantee inclusive and equitable quality education and promote long learning opportunities for all " (UNESCO 2019). This has nice implications for academics and therefore the coaching of academics to confirm nobody is left behind. It indicates that every teacher should have |an identical international standard by that their ICT competencies may be assessed and benchmarked. The ICT CFT has been in active use for the past twelve years. The framework has relevancy to each country and might be effectively accustomed benchmark the ICT competencies of academics in any country no matter the amount of their technological development. The ICT CFT Version three focuses on implementing the realisation of international commitment by providing a guide for the event of effective ICT in Education teacher coaching programs that area unit meant for contextualization to native and national desires. It is international in scope and any country will localize or contextualize the quality to guide and assess teacher competencies for the implementation of ICT curriculum.

UNESCO ICT CFT comprises attempted and tried archives assessed consistently and updated by UNESCO and its accomplices and subject specialists. There have been three refreshed renditions 2008, 2011, 2018 to keep it current and significant. ICT CFT is a device grown explicitly for Colleges of Education, sets worldwide ICT skills standard for educators. It boosts the integration of the advancement of ICT capabilities into the educational program and advises strategy. As the system tends to all parts of an educator's work, for example, understanding the policy, curriculum and evaluation, pedagogy and assessment, organistion and administration, and teacher professional learning. It could be considered as a sound sustainable strategy since it incorporates the arrangement of a qualitative access to education

and training, and furthermore offers cost decrease, self-guided preparing, information consistency, time and spot autonomy, and admittance to a worldwide crowd

UNESCO ICT – CFT centers around issues identified with digital literacy and the incorporation of innovation in the educational plan. One of the issues that calls for consideration of ICT – CFT concerns the role of the educator and their personality development. Educator's beliefs, attitude, existing abilities and practices are determinant factors in the acknowledgment of progress in teaching and learning. So, the references to the central function of the instructors ought to be talked about in more detail. The UNESCO systems needs to think about empowering cooperation between various sectors (private/public/instruction) expanding on previously existing work and focusing on what is 'feasible'. The system additionally need to call for improvement of new assessment methods and instruments that encourage and allows the use of the acquired competencies in authentic settings to make learning visible.

TVET Teacher Professional Competency Framework

TVET Teacher Professional Competency for industry 4.0 with exhaustive investigation focused on distinctive sets of competencies required by instructors in industry 4.0. A list of builds was distinguished through different document analysis. These professional competencies incorporate technical, non-technical, personal, mental, and physical qualities, as well as motive and self-concept. Each construct was divided into a few related sub-constructs. These constructs and sub-constructs were then proposed as a system for creating TVET teacher professional competence in Industry 4.0 time. The system pointed out that non-technical competency is as critical as technical competence and reinforces with instructor individual qualities, their thought process, and physical state within the TVET teaching career. TVET is based around "occupational competencies" which are set up for each career field and for each work title. It employs combinations of capable strategies to guarantee that the requirements of diverse industry sectors are tended to request, courses or competency-based training modules, competency-based evaluations/confirmations are conducted, employees/ learners / are productively prepared and competent. While the TVET teacher competency system emphasises significant subject knowledge, practical information, academic skills, and practical action as the key to improving the quality and status of TVET, it should also emphasise the need to strengthen and update the technical and vocational instruction and training programmes.

P21 -21ST Century Competency Framework

The P21 framework is a template for consolidating 21st century aptitudes into learning. It was created by an amalgamation of the US Department of Education, businesses including Apple, AOL, Microsoft, Cisco, and SAP, and organisations included in education such as the NEA. Collectively, this amalgamation is known as the Partnership for 21st Century Learning. It was to begin with distributed in 2006 and has been ceaselessly upgraded, in 2015. This system was made to combine a set of competencies that emphasise 21st Century Aptitudes for students and underpins instructors in teaching those skills. Developed with input from teachers, education experts, and business pioneers P21 system characterizes and outlines the abilities, information, skill, and back frameworks that students need to succeed in work, life,

and citizenship. When a school, locale, or state builds on this establishment, combining information and aptitudes with the essential support systems of guidelines, evaluations, educational modules and instruction, professional development, and learning situations - students are more engaged within the learning process and graduate way better arranged to flourish in today's digitally and all-inclusive interconnected world.

The system encompasses a wide range of topics and strategies for preparing teachers and influencing student outcomes. It is easily adaptable for exercises both inside and outside of the classroom. The framework also uses key academic subjects to teach life and career skills, as well as learning and development abilities, and data and media skills. The importance of moving toward formative evaluation is emphasised, as it is an important way of making students' learning visible while also providing feedback that can lead to both instructors' and students' capacity building. Information, media, and technology skills are included in the P 21 system as required competencies for successful citizenship. In any case, they include categories that are relevant to technical skills and knowledge in engineering, science, and technology. In the framework P 21st -century skills, Self- management/self-development or life and career skills are tended to as critical. However, administration of time, information, and assets of self and others are not included.

Individuals without adequate information, instruction, and training, battle to keep up. A system of 21st century abilities and building criteria might need to address time, information, and resources management aptitudes to better prepare students for effective careers.

European Framework for CLIL Teacher Education

The European Framework for CLIL Teacher Education is a conceptual framework that guides CLIL teachers' professional growth. CLIL (Content and Language Integrated Learning) is a two-pronged method in which a second language is used for both content and language learning and teaching. The system offers a set of guidelines and suggestions for developing CLIL professional curricula. CLIL programmes vary greatly in terms of structure, content, intensity, and language selection from country to country, and there are corresponding variations in how teacher education providers plan and execute teacher preparation and development programmes. The EFCT is intended to be a transnational conceptual method for promoting the implementation of technically sound educational practice in CLIL settings. It is not meant to be used as a guideline. Two key components define the framework's overall structure: (1) the target professional competences and (2) the professional development modules. The framework also includes an overview and a terminology section in which the framework's main words are described within a defined meaning range.

Students are highly inspired in these classes because they are using words to achieve real-world goals. The challenge is high, and it is the teacher's responsibility to keep it at a reasonable level, one that is high enough to keep them motivated but not so high that they give up and lose faith in their abilities.

The study of languages is at the heart of the curriculum. There is no need to discuss the importance of language learning any longer. The number of subjects that CLIL is integrated with multiplies language practice and research.

Contexts matter in teaching and learning. The vocabulary used in language teaching is often artificial and unauthentic. Even when the language is real, the actions are not, while in CLIL, the sense is meaningful, and once students are used to this approach, they no longer care about learning the foreign language. They focus on the content, and language is picked up automatically and naturally, giving it a greater chance to stick around in long-term memory.

It will save time. CLIL allows for increased language exposure. In comparison to conventional language classes, better outcomes are anticipated in less time. Time is becoming increasingly valuable, and obtaining adequate qualifications is never enough. It's also difficult to keep up with the pace of growth, technology, and change because life is always one step ahead of us, and CLIL is one way to avoid falling behind.

A wide range of teaching methods are available. Since each subject has its own didactic means of transmitting information, they are multiplied in CLIL groups. In such groups, everyone's potential is multiplied by two. For example, in geography classes, maps and visual aids are frequently used, while in language classes, they are rarely used. On the other hand, listening exercises are used more often in language classes. There will be a larger range of teaching techniques, practices, and tools if these two disciplines are combined.

Because of the CLIL method's dual character and integrated nature, educators dispute on who should teach in the CLIL medium – subject or language instructors – and what kind of training these teachers should receive, given the training demands of both groups differ. This is also linked to a broad awareness of CLIL's overarching objectives. CLIL should be taught by language teachers who are certified as content specialists if language is considered as a tool or vehicle rather than a goal in and of itself (Vazquez & Rubio, 2010). It is desirable to have someone who is qualified in both fields; yet, qualified teachers are scarce.

According to Benagas (2012), theoretical assumptions, classroom methodology, and integrated methodology implementation are the most typical challenges faced in the early stages of CLIL implementation. Educators and trainers must ensure that theory and practice are linked.

Changing teachers' jobs, according to Mendez Garcia and Vazquez (2012) and Benagas (2012), has a substantial impact on their self-perception, resulting in confusion and ambiguity. The mistake stems from a misinterpretation of their duties in pairs, as well as whether they are language or subject teachers. Teachers struggle to envision themselves as "integrated educators" (Mehisto, 2008). Team teaching is one of the downsides of CLIL, which is considered as one of the shortcomings due to a lack of position clarity.

The Cambridge English Teaching Framework:

The Cambridge English Teaching Framework is a self-evaluation and learning structure made by Cambridge English Language Assessment for English language educators. The design separates instructor information and abilities into five gatherings (Foundation, Developing, Proficient, and Expert) and characterizes four periods of educator advancement (Foundation, Developing, Proficient, and Expert).

1. The Learner and Learning 2. Instructing, Learning, and Evaluation 3. Language Proficiency 4. Language Awareness and Knowledge 5. Qualities and Professional Development

At each level of an educator's development, every class characterizes the center capabilities for effective instructing. Educators can arrange singular requirements by separating the five classifications into an assortment of parts. The system is utilized by English language educators to figure out where they are in their professions, assess where they need to go straightaway, think about what aptitude and abilities they need to improve, and perceive classes, capabilities, and instruments that will help them advance.

The Cambridge English Teaching Framework is to a greater extent a profiling network than a technique for assessing results. Maybe than giving a profile of a "solid instructor," it is planned to exhibit periods of an educator's advancement over the long run. This methodology perceives that educators' advancement isn't exclusively controlled by their long stretches of involvement, and that most instructors' development will be 'rough. Educators will be at different levels in every one of the spaces of showing experience and abilities at some random time.

In the flat pivot is The profiling network which has four degrees of showing capability (Foundation, Developing, Proficient, and Expert), just as five classes of showing ability and abilities on the upward hub.

1. The Learner and Learning :This class surveys an instructor's information on key language learning speculations and standards, just as their cognizance of different learning styles and their capacity to plan and advance language picking up utilizing that information.

2. Guidance, Learning, and Evaluation :This classification surveys an instructor's capacity to plan and deal with language learning, use learning devices viably, comprehend showing language frameworks and abilities, and evaluate learning..

3. Language Ability :This classification thinks about an educator's own language expertise, their appreciation of language focuses instructed at different levels of the Common European Framework of Reference for Languages (CEFR), and their capacity to utilize language accurately and appropriately when speaking with understudies and different instructors.

4. Language Knowledge and Awareness :This classification looks at an educator's grip of watchwords and standards used to clarify language, their utilization of methods to confirm and improve their language mindfulness, and their capacity to try that information to assist understudies with learning a language.

5. Qualities and Professional Development :Comprehension and involvement with the fields of educator learning, homeroom perception, proficient turn of events, and basic reflection are analyzed in this class**.**

Teachers' experience develops over time as they gain a better understanding of teaching and learning, become more conscious of their own strengths, shortcomings, and potential as teachers, become more sophisticated in their preparation, decision-making, teaching skills, and reflection, and gain the ability to adapt to a wider range of classroom situations.

Framework Analysis

All of the structures are fairly reliable in terms of what comprises 21st-century competences; nevertheless, each structure emphasises a different set of abilities. The TVET Competency Framework and P21 are more generic structures that include a conceptualization of 21st-century skills as well as initiatives to foster creativity, flexibility, long-term learning, and a potential collection of competencies to address the difficulty of rapid change in professional competencies criteria for teachers. The Cambridge Competency framework focuses on instructor self-evaluation and professional growth, whereas the UNESCO-ICT framework focuses on digital proficiency and its integration into the curriculum. As a result, the value given to a certain set of capabilities varies across the spectrum of what all definitions agree to name 21st century abilities. Although all of the frameworks allude to similar competencies, it's vital to note that the categories utilised to group these talents together can't be successfully contrasted due to differences in focus and lines of reasoning. The target competences, or professional skills as defined by the European Framework (Marsh et al., 2010), are separated into eight elements, some of which are CLIL specific, others are more general pedagogical competences, and others are more general but have a "CLIL flavour." newly qualified CLIL teachers should strive for the majority of them; however, experienced and trained teachers will need to upgrade some of them and focus only on the most important CLIL-related ones, which, according to the authors, include CLIL Fundamentals, Content and Language Awareness, Methodology and Assessment, and Learning Resources and Environment in this context. They are necessary abilities for CLIL practitioners, as they contribute to the capacity to integrate diverse parts of CLIL in a professional manner as well as the capacity to apply them in the classroom. While CLIL-specific points can be found in three of the remaining four competence classes, such as Personal reflection, Classroom management, and Research and evaluation, they are more prevalent in nature. Personal reflection, as previously said, is the teacher's contribution to his or her own professional development. Despite the fact that it is broken into skills with CLIL in mind, it could be seen of as a more broad rather than CLIL-specific competency. CLIL Management, the final one, is more concerned with the administrative aspects of CLIL deployment than with the success of CLIL teachers in the classroom.

Communication, teamwork, ICT-related abilities, and social and/or cultural awareness are all highly valued. In the twenty-first century, most systems regard creativity, critical thinking, problem-solving, curriculum, and professional advancement to be vital competences. Almost all frameworks place a strong emphasis on information and communication technologies (UNESCO ICT CFT and P21). The development of ICT is related with a completely new set of competencies on how to successfully use, handle, evaluate, and communicate knowledge through various types of media, which is seen as a competition for new abilities by all systems. Although some structures place an emphasis on ICT-related abilities as separate domains (P21, CETF), others place an emphasis on progressive integrative approaches in which ICT skills development is integrated into 21st-century competences. Furthermore, frameworks like the Cambridge English Teaching Framework and the CLIL Competency Framework address issues like the place of these competencies in self-assessment, the role of

teachers and their professional development, and the involvement of various public and private sector stakeholders in the assessment of 21st century skills.

Recommendations

The study concludes with a few recommendations that could aid in the integration of 21st century competencies into national and school educational plans. To begin, an organisational definition for each of the 21st century competencies is needed in order to determine what knowledge, aptitudes, and skills are expected of learners at different age levels. Such organisational definitions will help to create a pedagogical continuum (Voogt et al. 2011) for organising and surveying 21st-century competency learning across age levels and subjects. Second, the connections between core subjects and 21st-century skills should be clearly defined. The presentation of interdisciplinary topics, both within and across subjects, may help to solidify these connections. Furthermore, since they must represent current cultural problems, interdisciplinary topics are diverse and in constant flux. Third, in order to ensure that students learn about and use ICT, ICT literacy should be integrated into and through all other 21st century competencies and core subjects (cf. Jenkins et al. 2006). Fourth, the importance of formal and informal learning environments in the acquisition of 21st-century skills should be acknowledged and considered. Techniques for integrating what is learned within and outside the educational institution should be created. Finally, national structures providing clear definitions of 21st-century competencies, as well as addressing strategies to aid and monitor their evaluation and implementation, are needed.

Conclusion:

The current study focuses on the need to develop structures that are consistent with established competency frameworks to identify differences between acquired and needed competences in the technical education field. Appropriate strategies for faculty growth will be implemented to aid in successful teaching and improving teaching quality. Furthermore, a better understanding of the major challenges faced by entry-level teachers in engineering education would aid in the development of an effective pre-service teacher training programme for future educators. This is necessary to ensure that graduates of the pre-service programme possess the skills and qualities necessary for success as teachers of engineering students. Furthermore, planning needs assessments should be monitored so that changes in requirements are profiled on a regular basis which may be due to professional advancement.

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