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Appraising Digital Mastery of Professors':

Professionally, Pedagogically and Empowering Learners Digitally

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Abstract

Digital competence is the capacity to apply the knowledge, attitudes, and abilities required to develop, implement, evaluate, and continuously review ICT-supported teaching and learning activities. Since the widespread adoption of Information and Communication Technologies (ICTs) in higher education, teachers must be highly digitally competent and have positive attitudes in order to properly manage their classrooms. The prime aim of the study is to investigate the digital proficiency level of Professors with respect to the level of professional digital competence, pedagogical digital competence and promoting the digital skills of learners with respect to their gender, age, educational qualification and teaching experience. A survey technique was used, involving 91 Professors under stratified random sampling technique with the highest educational qualification as M.Phil and Ph.D with teaching experience from 1-5 and above 16 years .The research instrument comprised 21 (twenty-one) questions, constituting the digital competence of the educators is subdivided into 6 (six) different areas such as Professional Engagement, Technological and digital resources, Teaching and learning, Assessment, Empowering learners and promoting student digital competences. Data analysis involved descriptive statistics through mean and standard deviation and inferential statistics, including t-

tests and F test to identify significant differences among the variables. Key findings indicate that that 39.8 % of respondents are at the level of Leader who can be the source of inspiration for others. 35.5 % of the respondents modestly empower the learners digitally. Professional digital competence, pedagogical digital competence and digital skills to empower learners are unbiased based on their educational qualifications. The research findings provide valuable insights among Professorss by highlighting the essential role of these dimensions in improving students' learning experiences and outcomes. The study recommends that promotion can be achieved through the organization of training programs, effective resource allocation, and the implementation of policy initiatives by both institutions and the government. By adopting these recommendations, stakeholders can play a crucial role in enhancing the quality of education and improving student learning outcomes.

Keywords: Digital competence, empowering learners, professional digital competence, pedagogical digital competence, professional engagement

Introduction

Technology has become an integral part of our daily lives, transforming how we live, work, and interact with the world. The rapid growth of technology has resulted in a digital revolution that affects every aspect of society. Digital literacy among teachers is increasingly recognized as essential for effective teaching in the digital age. It encompasses not only technical skills but also the ability to critically evaluate and ethically use digital tools. Professional competence encompasses subject knowledge, operational skills, and the ability to apply these in practice, highlighting the importance of continuous professional development (Bachynska et al., 2024). Professional and pedagogical competency among higher education teachers is crucial for effective teaching and learning, especially in the evolving educational landscape. Promoting digital competency among students is essential in today's technology-driven society. This

involves equipping learners with the skills to effectively use digital tools for information management, communication, and problem-solving. Various strategies can be employed across educational levels to enhance these competencies. The digital competence approach fosters a dynamic educational environment that enhances the responsibility and effectiveness of future educators.

Need and Importance of the Study

Tools such as Google Classroom and Zoom enhance communication and collaboration, which are crucial for developing digital competencies (Baimakhan et al., 2024). Educators should be able to assess digital resources critically, ensuring ethical and creative use in their pedagogical practices (Yadav, 2024). Effectively integrating information and communication technology (ICT) into teaching improves educational outcomes and engages students. (Yadav, 2024). The competence approach emphasizes the integration of knowledge, skills, and personal attributes in teacher training, ensuring readiness for innovative pedagogical activities (Vitvytska, 2024). Using a blend of traditional and digital teaching methods can significantly improve students' digital skills, particularly in higher education settings (Medeshova et al., 2025).

Review of the Related Literature

The following studies highlight the importance of both pedagogical skills and professional knowledge, emphasizing the need for continuous development in these areas. Yadav (2024) stated that A conducive educational environment that promotes digital literacy can significantly enhance both teacher and student outcomes. Gogoberidze (2024) reported that traditional assessment methods dominate the evaluation of pedagogical competencies, often focusing on knowledge rather than practical skills. Zheng(2025) emphasized that teachers must possess skills in information technology, data management, and algorithmic awareness to

navigate digital tools effectively. Fazal (2024) conveyed that variations in digital literacy levels exist between public and private educational institutions, impacting overall teacher preparedness . Hai (2024) explored that incorporating digital skills into subjects like History and Geography can foster digital competence from an early age. Medeshova (2025) examined that using a blend of traditional and digital teaching methods can significantly improve students' digital skills, particularly in higher education settings. Yadav (2024) asserted that Educators should be able to assess digital resources critically, ensuring ethical and creative use in their pedagogical practices.

Research Questions

1. What is the digital proficiency level of the Professors with respect to the Common European Framework of Reference for Languages (CEFR)?

Objectives of the Study

1. To measure the level of professional digital competence of Professors across gender, age, educational qualification and teaching experience.
2. To learn the level of pedagogical digital competence level of Professors across gender, age, educational qualification and teaching experience.
3. To examine the level of empowering the students' digital competence of Professors across gender, age, educational qualification and teaching experience.

Hypotheses

Ha: The digital competence of Professors is prominent.

Hb: Digital competence of male and female Professors differs significantly.

Hc: The digital competence of Professors differs significantly with respect to their educational qualification.

Hd: Digital competence of Professors irrespective of their age differs significantly.

He: Teaching Experience of Professors do not differ significantly in their digital competence.

Methodology

Type of the Study: Survey Technique

Sampling Method of the Study: Stratified Random Sampling Technique

Sampling Size: 91Professors

Research Instrument Used:

The following research instruments were used in the present study to collect the data:

i. General information Schedule

ii. Digital Competence Framework for Educators were used to collect data from Professors.

Statistical Techniques Used: Mean, Standard Deviation, 't' test and F test

Data Analysis and Interpretation

Table 1

Digital Proficiency level of Professors with respect to Common European Framework of Reference for Languages (CEFR)

Competency Level	Frequency	Percentage
Explorer	4	4.3
Integrator	16	17.2
Expert	30	32.3
Leader	37	39.8
Pioneer	6	6.5

The digital Proficiency level used by the Common European Framework of Reference for Languages(CEFR) mapped in the Table 1.It implied that 39.8 % of the respondents are at the level of Leader who can be the source of inspiration for others. 32.3 % of the respondents are at the level of Expert who can use the digital tools confidently, critically and creatively to enhance their professional activities.17.2 % of the respondents are at the level of Integrator who can use the best digital strategies for their contexts.6.5 % of the respondents belong to Pioneer level who can lead innovation and be the role model .4.3 % of the respondents are belong to Explorer level who need insight and inspiration to expand their competence. Ongoing professional development is crucial for teachers to keep pace with technological advancements and improve their digital skills (Yadav, 2024). With respect to CEFR mapping , there is no respondent belonging to Newcomers. Thus, it shows that the respondents are familiar with Digital Tools. Hence, the specified H_a is accepted.

Table 2

Digital Proficiency level of Professors in relation to Professional Digital Competence, Pedagogical Digital Competence and Digital Skills to Empower Learners

Competency/ Level	Professional Digital competence		Pedagogical Digital competence		Digital skills to Empower Learners		Digital competency	
	F	%	F	%	F	%	F	%
Low	34	36.6	34	36.6	32	34.4	34	36.6
Moderate	35	37.6	30	32.3	33	35.5	28	30.1
High	24	25.8	29	31.2	28	30.1	31	33.3

Educators are expected to possess a high level of competence to remain competitive in the evolving educational landscape.

Table 4.2 encompasses a sample size (n=91) of respondents providing the level of competence in professional, pedagogical and digital skills to empower learners. Generally,

majority respondents (36.6%) fell under the low level of competence followed 33.3 % of the respondents falls under high level of competence and 30.1% respondents belonging to the moderate level of competence. The shift to online education during the COVID-19 pandemic exposed gaps in teachers' online pedagogical competencies, necessitating a focus on professional development in this area (Hai et al., 2024).

In the context of professional digital competence, 37.6 % of the respondents had a temperate level of professional digital competence followed by 36.6 % of them are insufficient digital competence and 25.8 % were influential in professionally competent in digital skills.

In the context of pedagogical digital competence, 36.6 % of the respondents are inadequate in their pedagogical digital skills followed by 32.3 % of them were mediocre in pedagogical digital competence and 31.2 % were notable at their digital pedagogical competence.

In the context of empowering the learners digitally, 35.5 % of the respondents are modestly empowers the learners digitally, 34.4 % of them are deficient in empowering the learners digitally and 30.1 % of them were primitive in empowering the learners digitally. Using a blend of traditional and digital teaching methods can significantly improve students' digital skills, particularly in higher education settings (Medeshova et al., 2025).

Table 3

Significant differences in Professional Digital competence, Pedagogical Digital Competence and Empowering the Learners Digitally are Grouped According to Profile

Profile	Test Type	Professional Digital competence (Sig.Value)	Pedagogical Digital Competence (Sig.Value)	Digital skills to Empower Learners (Sig.Value)	Specified Hypothesis Status
Gender	't'	0.71*	0.05*	0.72*	H_b is denied
Educational Qualification	't'	0.74*	0.71*	0.71*	H_c is denied

Age	F	0.10*	0.28*	0.08*	H_d is denied
Teaching Experience	F	0.11*	0.73*	0.48*	H_e is accepted

*Not significant at 0.05 level

The‘t’ test was used to verify the statistically significant difference in professional digital competence , pedagogical digital competence and digital skills to empower learners of Professors with respect to their gender and educational qualification at 0.05 level of significance. Since the P value is greater than 0.05 in professional digital competence, pedagogical digital competence and digital skills to empower learners of Professors are equitable based on gender and Educational Qualification. Therefore, the specified hypotheses (H_b, H_c) are denied.

The F test was used to verify the statistically significant difference in professional digital competence, pedagogical digital competence and digital skills to empower learners of Professors with respect to their age and Teaching experience at 0.05 level of significance. Since the P value is greater than 0.05 in professional digital competence, pedagogical digital competence and digital skills to empower learners of Professors are impartial based on age and teaching experience. Therefore, the specified hypothesis (H_d)are denied. The specified hypothesis (H_e) is accepted.

Findings and Discussion

The prime aim of the study is to investigate the digital proficiency level of the Professors with respect to Common European Framework of Reference for Languages(CEFR) and to study the level of professional digital competence, pedagogical digital competence and promoting the digital skills of learners in respect to their gender, age, educational qualification and teaching experience. It implied that 39.8 % of respondents are at the level of Leader who can be the source of inspiration for others. 6.5 % of the respondents belong to the Pioneer level who can

lead innovation and be the role model . Uneven access to digital resources and training opportunities can hinder the development of digital competencies among teachers (Jingfu & Ruiming, 2024).4.3 % of the respondents are belong to the Explorer level who need insight and inspiration to expand their competence. Ongoing professional development is crucial for teachers to keep pace with technological advancements and improve their digital skills (Yadav, 2024). With respect to CEFR mapping , there is no respondent belonging to Newcomers. Thus it shows that the respondents are familiar with Digital Tools. The shift to online education during the COVID-19 pandemic exposed gaps in teachers' online pedagogical competencies, necessitating a focus on professional development in this area (Hai et al., 2024). 30.1 % of them are primitive in empowering the learners digitally. Using a blend of traditional and digital teaching methods can significantly improve students' digital skills, particularly in higher education settings (Medeshova et al., 2025). Professional digital competence, pedagogical digital competence and digital skills to empower learners of Professors are equitable based on gender. Gender does not significantly predict digital competence, suggesting that other factors may play a more critical role (Goicochea-Ríos et al., 2024). Professional digital competence, pedagogical digital competence and digital skills to empower learners are unbiased based on their educational qualification. Educators with degrees in technology or natural sciences generally score higher in digital competencies than those from social sciences (Cepa-Rodríguez & Lancha-Villamayor, 2025). There was no notable difference in the average scores for professional digital competence, pedagogical digital competence, and digital skills to empower learners based on age. In contrast, Younger educators tend to exhibit higher levels of digital literacy compared to older educators, with digital skills declining as age increases (Cepa-Rodríguez & Lancha-Villamayor, 2025). There was no significant difference between the mean scores on professional digital competence , pedagogical digital competence and digital skills to empower learners of Professors with respect to their teaching experience. Educators with extensive teaching experience may still

require ongoing training to keep pace with technological advancements(Zhang & Policarpio, 2025).Digital competency inclination highlights the necessity for targeted training programs for older educators to enhance their digital skills(Palacios Rodríguez et al., 2024).

Conclusion

While the integration of digital tools in education offers numerous benefits, it is important to balance these with traditional methods to avoid potential drawbacks, such as reduced face-to-face interaction and digital overload. Cristi (2023) reported that the emphasis on competencies may overshadow the intrinsic qualities of teaching, such as passion and creativity, which are equally vital for fostering deep learning in students(Cristi-González et al., 2023). The research findings provide valuable insights among Professorss by highlighting the essential role of these dimensions in improving students' learning experiences and outcomes. The study recommends that promotion can be achieved through the organization of training programs, effective resource allocation, and the implementation of policy initiatives by both institutions and the government. By adopting these recommendations, stakeholders can play a crucial role in enhancing the quality of education and improving student learning outcomes.

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