High School English Teachers' Perceptions of Digital Competence in Teaching

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ARTICLE INFO	ABSTRACT
	This study examines high school teachers' perception of digital competence in teaching English, focusing on its relationship with selected demographic and professional variables such as gender, locality, types of school and classes handling. Using a normative survey method, data was collected from 823 high school teachers across 77 schools in Salem district, Tamil Nadu. The findings indicate that most teachers demonstrate a moderate level of digital competence, with variations across key dimensions, including information processing, communication and collaboration, digital content creation, security, and troubleshooting. While some educators effectively integrate technology into their teaching, others face challenges, emphasizing the need for continuous professional development and digital training programs. The study highlights the role of educational institutions and policymakers in promoting digital literacy, resource allocation, and the adoption of innovative teaching methodologies. Enhancing digital competence is essential for effective technology integration and fostering engaging, student-centered learning experiences in English education. **Keywords**: Digital competence, English language teaching, high school teachers, technology integration, professional development, digital literacy, teaching effectiveness.

Introduction

Education is a lifelong process that empowers individuals to discover truth, foster intellectual and moral growth, and develop a well-rounded personality. It transcends mere acquisition of knowledge and material wealth, instead cultivating inner wisdom and ethical values. With the advancement of science, technology, and industrial progress, education has become a fundamental pillar of societal development. Educational institutions play a crucial role in shaping communities by transmitting culture, knowledge, skills, and competencies to successive generations. Regardless of structural transformations driven by technological advancements, the fundamental role of education remains consistent in preparing individuals for future challenges (UNESCO, 2022).

English Language Teaching
Language is a structured system of symbols used primarily for communication, encompassing both spoken and written forms. It serves as a repository of knowledge and a tool for intellectual and social interaction. According to Robin (2013), language is a critical aspect of human intelligence, enabling the transfer of knowledge across generations. English language teaching has evolved significantly over the past half-century, with extensive research focused on enhancing teacher education and training to improve pedagogical effectiveness (Lin & Chien, 2010). In today's globalized world, English has become a primary medium of communication, necessitating diverse instructional approaches. The communicative approach to language teaching, for instance, emphasizes contextual learning where students use language to express ideas, preferences, beliefs, emotions, and information effectively (Richards, 2020). This methodology fosters interactive and meaningful language acquisition beyond mere grammatical and lexical instruction.

Perception of Digital Competence

Digital competence is a critical skill set required for academic success and lifelong learning in today's digital era. According to Gisbert et al. (2016), it encompasses the ability to acquire, evaluate, and utilize digital tools effectively for educational and professional purposes. The European Commission (2020) defines digital competence as the ability to use information and communication technology (ICT) safely and critically in various aspects of life, including work, education, and social interactions. It involves essential ICT skills such as information retrieval, data analysis, digital content creation, and online collaboration. Flores and Roig (2019) describe digital teaching competence as a multidimensional ability that includes information processing, communication, knowledge transformation, and ethical digital practices. Educators must develop these competencies to integrate technology effectively into their teaching methodologies, thereby enhancing student engagement and learning outcomes.

Dimensions of Digital Competence

Digital competence is a multifaceted construct that extends beyond technical proficiency to include cognitive, ethical, and social dimensions. Various global initiatives have attempted to define its key elements and frameworks for specific groups, including educators and 21st-century learners (Vuorikari et al., 2022). Based on an analysis of recent literature and policy recommendations, four core dimensions of digital competence have been identified for higher education: Technological/Instrumental Operation, which refers to the ability to effectively use digital tools, software, and platforms for educational and professional purposes; Information Processing and Management, which involves searching, evaluating, organizing, and synthesizing digital information in a critical and responsible manner; Cognitive, Pedagogic, and Knowledge Construction, which focuses on integrating digital resources into teaching practices to enhance knowledge construction, critical thinking, and student engagement; and Digital Citizenship, which encompasses understanding ethical, social, and legal responsibilities in the digital space, including online safety, digital literacy, and responsible communication (Redecker, 2021). These dimensions provide a comprehensive framework for assessing and improving educators' digital competence, ultimately contributing to more effective and inclusive teaching practices.

Review of Related Literature

Recent research highlights the significance of digital competence in education. Kumpikaite-Valiuniene et al. (2024) examined the role of digital competence in managing stress, burnout, and well-being among students during the COVID-19 lockdown, emphasizing the positive influence of social and informational digital competencies. Srivastava (2024) explored the relationship between digital competence and life skills in higher education teachers, revealing a significant predictive relationship. Joshi (2023) focused on enhancing communicative competence using technology-driven classroom approaches, demonstrating the effectiveness of interactive web tools in fostering 21st-century skills. Rajeswaran (2022) identified challenges faced by digital immigrant teachers in adapting to technological integration and suggested faculty development programs as a solution. Ramkrishna (2022) found a positive correlation between teacher effectiveness, self-esteem, job satisfaction, and digital competence. Other studies, such as those by Findeisen and Wild (2022), assessed digital competence in higher education, showing how prior academic backgrounds influence digital skills. Wannapiroon et al. (2022) analyzed vocational instructors' digital competencies, identifying key abilities needed for online education in the evolving educational landscape. These studies collectively underscore the importance of digital competence in both teaching and learning contexts.

Objectives of the Study

The following objectives are considered for the study
❖ To find out the level of perception on digital competence of high school teachers
❖ To study the significant differences in the perception on digital competence of high school teachers in teaching English based on the select sub samples gender, locality, types of school, classes handling.

Hypotheses of the Study

The Hypotheses of the present study is formulated as follows
❖ The level of perception of digital competence on high school teachers of the total sample is moderate
❖ There is no significant differences in the perception on digital competence of high school teachers based on the select sub samples gender, locality, types of school, classes handling.

Research Design

This study investigates high school teachers' perception of digital competence in teaching English, focusing on selected variables. The normative survey method was employed to examine relationships between digital competence, attitude, and readiness in teaching. The research was conducted in Salem district, Tamil Nadu, with a stratified random sample of 823 high school teachers from 77 schools, including government,

government-aided, and private schools. To ensure reliability, the Perception on Digital Competence Scale was validated using the split-half method (0.857) and Cronbach's Alpha (0.873), confirming strong internal consistency.

Statistical Techniques Used

The following statistical techniques have been employed to analyse the data obtained in order to test the hypotheses:

❖ **Percentage analysis** – to find out the level of perception on digital competence, attitude and readiness of teaching English among high school teachers.

❖ 't' – test to find out the difference between two variables.

❖ 'F'- test to find the difference among more than two variables. Whenever 'F' is significant, Post – Hoc Test is used.

Percentage Analysis
Objective -1

❖ To assess the level of perception on digital competence and Its dimensions such as information, communication and collaboration, digital content creation, security, trouble shooting, perception on digital competency, positive attitude of perception on digital competence of high school teachers

Table – 1 Table Showing the Level of Perception on Digital Competence of High School Teachers

VARIABLE	LOW		MODERATE		HIGH	
	N	%	N	%	N	%
Information	243	29.52	360	43.74	220	26.73
Communication, Collaboration	252	30.61	224	27.22	327	39.73
Digital Content Creation	234	28.43	347	42.16	242	29.40
Security	231	28.06	362	43.99	230	27.95
Trouble Shooting	214	26.00	371	45.08	238	28.92
Perception on Digital Competency	245	29.76	358	43.50	220	26.73
Positive attitude on Digital Competence	227	27.58	378	45.93	218	26.49
Overall Perception on Digital Competence	228	27.70	375	45.57	220	26.73

The study revealed that most high school teachers demonstrated a moderate level of digital competence in teaching English. In specific areas, information competence was moderate for 43.74% of teachers, while 29.52% had low and 26.73% had high levels. For communication and collaboration, 39.73% exhibited high competence, 27.22% moderate, and 30.61% low. In digital content creation, 42.16% showed moderate competence, 28.43% low, and 29.40% high. Security skills followed a similar pattern, with 43.99% moderate, 28.06% low, and 27.95% high. Troubleshooting skills were moderate for 45.08%, while 26.00% had low and 28.92% had high levels. Overall perception of digital competence remained moderate for 43.50% of teachers. Similarly, attitude toward digital competence was moderate for 45.93%, while 27.58% had low and 26.49% had high levels. General digital competence was moderate for 45.57%, with 27.70% low and 26.73% high, confirming a predominant moderate level across all dimensions.

Hypotheses – 1

There is no significant difference in the perception on digital competence and its dimensions among high school teachers with regards to gender, locality, type of school, and classes handling.

[A] Gender

❖ Male and Female high school teachers do not differ in their perception on digital competence

Table -2 Table Showing the Male and Female High School Teachers in their Perception on Digital Competence

Dimensions	Gender	N	Mean	S.D.	t-Value	P-Value	Sig.
Information	Male	390	33.80	4.529	0.306	0.760	NS
	Female	433	33.71	4.440			
Communication and Collaboration	Male	390	29.49	2.543	1.363	0.173	NS
	Female	433	29.74	2.542			
Digital Content Creation	Male	390	39.89	3.378	2.114	0.020	S
	Female	433	49.92	4.401			
Security	Male	390	29.95	2.411	1.203	0.229	NS
	Female	433	29.74	2.534			
Trouble Shooting	Male	390	41.54	3.484	0.673	0.501	NS

	Female	433	41.37	3.508			
Perception on Digital Competency	Male	390	33.78	4.540	2.209	0.034	S
	Female	433	37.71	5.435			
Positive Attitude on Digital Competence	Male	390	32.14	4.681	1.898	0.058	NS
	Female	433	31.53	4.562			
Overall Perception on Digital Competence	Male	390	240.59	11.771	1.086	0.231	NS
	Female	433	239.72	11.348			

NS- Not significant   S – Significant

From the above table, it is found that significant differences are not noted in six cases. Hence it is concluded that the hypothesis is accepted in these cases. As there is significant difference in two cases, it is concluded that the hypothesis is not accepted in these cases.

Conclusion
❖ Male and female high school teachers do not differ in the dimensions information, communication and collaboration, security, troubleshooting, positive attitude on digital competence, and overall perception on digital competence.
❖ Male and female high school teachers do differ in the dimensions digital content creation and perception on digital competency.

[B] Locality
❖ Rural and Urban high school teachers do not differ in their perception on digital competence

Table-3 Table Showing the Rural and Urban High School Teachers in their Perception on Digital Competence

Dimensions	Locality	N	Mean	S.D.	t-Value	P-Value	Sig.
Information	Rural	513	43.62	5.487	2.091	0.046	S
	Urban	310	33.97	4.467			
Communication and Collaboration	Rural	513	49.50	3.595	2.727	0.035	S
	Urban	310	29.82	2.449			
Digital Content Creation	Rural	513	39.77	3.512	1.482	0.139	NS
	Urban	310	40.13	3.165			
Security	Rural	513	29.85	2.514	0.096	0.923	NS
	Urban	310	29.83	2.419			
Trouble Shooting	Rural	513	41.46	3.667	0.066	0.947	NS
	Urban	310	41.44	3.197			
Perception on Digital Competency	Rural	513	33.62	4.487	1.009	0.313	NS
	Urban	310	33.95	4.475			
Positive Attitude on Digital Competence	Rural	513	31.90	4.473	0.656	0.512	NS
	Urban	310	31.68	4.874			
Overall Perception on Digital Competence	Rural	513	239.72	11.684	1.314	0.189	NS
	Urban	310	240.81	11.315			

NS- Not significant   S – Significant

From the above table, it is found that significant differences are not noted in six cases. Hence it is concluded that the hypothesis is accepted in these cases. As there is significant difference in two cases, it is concluded that the hypothesis is not accepted in these cases.

Conclusion
❖ Rural and Urban high school teachers do differ in the dimensions information, and communication and collaboration of perception on digital competence.
❖ Rural and Urban high school teachers do not differ in the dimensions digital content creation, security, trouble shooting, perception on digital competency, positive attitude on digital competence, and overall perception on digital competence.

[C] Types of School
High school teachers from different types of school do not differ in their perception on digital competence

Table – 4 Table Showing the Perception on Digital Competence of High School Teachers with reference to Types of School

Dimensions		Sum of Squares	df	Mean Square	F	P	Sig.
Information	Between Groups	10.385	2	5.193	0.258	0.772	NS
	Within Groups	16487.049	820	20.106			

					F	P	Sig.
	Total	16497.434	822				
Communication and Collaboration	Between Groups	3.314	2	1.657	0.256	0.775	NS
	Within Groups	5316.163	820	6.483			
	Total	5319.478	822				
Digital Content Creation	Between Groups	34.376	2	17.188	1.499	0.224	NS
	Within Groups	9401.420	820	11.465			
	Total	9435.796	822				
Security	Between Groups	3.075	2	1.537	0.250	0.779	NS
	Within Groups	5041.754	820	6.148			
	Total	5044.829	822				
Trouble Shooting	Between Groups	17.176	2	8.588	0.702	0.496	NS
	Within Groups	10026.679	820	12.228			
	Total	10043.854	822				
Perception on Digital Competency	Between Groups	8.317	2	4.159	0.207	0.813	NS
	Within Groups	16509.073	820	20.133			
	Total	16517.390	822				
Positive Attitude on Digital Competence	Between Groups	46.051	2	23.026	1.076	0.341	NS
	Within Groups	17547.244	820	21.399			
	Total	17593.295	822				
Overall Perception on Digital Competence	Between Groups	494.954	2	247.477	1.858	0.157	NS
	Within Groups	109190.874	820	133.160			
	Total	109685.827	822				

NS- Not significant

From the above table, it is found that significant differences are not noted in all cases. Hence it is concluded that the hypothesis is accepted in all cases.

Conclusion

❖ High school teachers from different types of management do not differ in all the dimensions and also their overall perception on digital competence.

[D] Classes Handling

❖ High school teachers from different classes handling do not differ in their perception on digital competence

Table – 5 Table Showing the Perception on Digital Competence of High School Teachers with reference to Classes Handling

Dimensions		Sum of Squares	df	Mean Square	F	P	Sig.
Information	Between Groups	73.868	2	36.934	1.844	0.159	NS
	Within Groups	16423.565	820	20.029			
	Total	16497.434	822				
Communication and Collaboration	Between Groups	14.523	2	7.261	1.122	0.326	NS
	Within Groups	5304.955	820	6.469			
	Total	5319.478	822				
Digital Content Creation	Between Groups	36.006	2	18.003	1.571	0.209	NS
	Within Groups	9399.790	820	11.463			
	Total	9435.796	822				
Security	Between Groups	10.538	2	5.269	0.858	0.424	NS
	Within Groups	5034.291	820	6.139			
	Total	5044.829	822				
Trouble Shooting	Between Groups	89.862	2	44.931	3.701	0.025	S
	Within Groups	9953.992	820	12.139			

	Total	10043.854	822				
Perception on digital competency	Between Groups	72.411	2	36.206	1.805	0.165	NS
	Within Groups	16444.979	820	20.055			
	Total	16517.390	822				
Positive Attitude on Digital Competence	Between Groups	17.876	2	8.938	0.417	0.659	NS
	Within Groups	17575.419	820	21.433			
	Total	17593.295	822				
Overall Perception on Digital Competence	Between Groups	51.824	2	25.912	0.194	0.824	NS
	Within Groups	109634.003	820	133.700			
	Total	109685.827	822				

NS- Not significant   S – Significant

From the above table, it is found that significant differences are not noted in seven cases. Hence it is concluded that the hypothesis is accepted in these cases. As there is significant difference in one case, it is concluded that the hypothesis is not accepted in these cases.

Conclusion
❖ High school teachers from different classes handling do not differ in the dimensions information, communication and collaboration, digital content creation, security, perception on digital competence, positive attitude on digital competence, and perception on overall digital competence.
❖ High school teachers from different classes handling do differ in the dimensions troubleshooting of perception on digital competence.

Post Hoc Tests
Table - 5 [a]

Dependent Variable	(I) Class Handling	(J) Class Handling	Mean Difference (I-J)	Std. Error	Sig.
Trouble Shooting	7th	8th	0.208	0.262	0.728
		9th	1.035	0.381	0.026**
	8th	9th	0.827	0.376	0.090

From the above table it is found that 7th and 9th classes handling high school teachers do differ in the trouble shooting of perception on digital competence.

Findings of the Study
The study revealed that most high school teachers demonstrated a moderate level of digital competence in teaching English. In specific areas, information competence was moderate for 43.74% of teachers, while 29.52% had low and 26.73% had high levels. For communication and collaboration, 39.73% exhibited high competence, 27.22% moderate, and 30.61% low. In digital content creation, 42.16% showed moderate competence, 28.43% low, and 29.40% high. Security skills followed a similar pattern, with 43.99% moderate, 28.06% low, and 27.95% high. Troubleshooting skills were moderate for 45.08%, while 26.00% had low and 28.92% had high levels. Overall perception of digital competence remained moderate for 43.50% of teachers. Similarly, attitude toward digital competence was moderate for 45.93%, while 27.58% had low and 26.49% had high levels. General digital competence was moderate for 45.57%, with 27.70% low and 26.73% high, confirming a predominant moderate level across all dimensions. In overall high school teachers have moderate level of perception on digital competence in teaching English.
Gender
❖ Male and female high school teachers do not differ in the dimensions information, communication and collaboration, security, troubleshooting, positive attitude on digital competence, and overall perception on digital competence.
❖ Male and female high school teachers do differ in the dimensions digital content creation and perception on digital competence.
Locality
❖ Rural and Urban high school teachers do differ in the dimensions information, and communication and collaboration of perception on digital competence.

❖ Rural and Urban high school teachers do not differ in the dimensions digital content creation, security, trouble shooting, perception on digital competency, positive attitude on digital competence, and overall perception on digital competence.

Types of School
❖ High school teachers from different types of management do not differ in all the dimensions and also their overall perception on digital competence.

Classes Handling
❖ High school teachers from different classes handling do not differ in the dimensions information, communication and collaboration, digital content creation, security, perception on digital competence, positive attitude on digital competence, and perception on overall digital competence.

❖ High school teachers from different classes handling do differ in the dimensions troubleshooting of perception on digital competence.

Educational Implications

1. Improving teachers' digital competence can lead to the adoption of innovative teaching methods, such as interactive multimedia, digital assessments, and blended learning, which can enhance students' engagement and comprehension.
2. The study highlights the need for continuous training programs that equip high school English teachers with the necessary digital skills to integrate technology effectively into their lessons.
3. Educational institutions and policymakers can incorporate digital literacy components into teacher education programs, ensuring that future educators are prepared for technology-driven instruction.
4. A digitally competent teacher can create a more engaging and interactive learning environment, leading to improved language acquisition, critical thinking, and communication skills among students.
5. The study can inform educational policymakers about the gaps in digital competence among teachers, leading to reforms in teacher training, digital resource allocation, and instructional technology policies.

Conclusions

The study highlights that high school teachers generally exhibit a moderate level of digital competence in teaching English, with variations across different dimensions. While a considerable number of teachers demonstrated proficiency in areas such as communication, collaboration, and troubleshooting, others faced challenges in digital content creation and security. The findings suggest that factors like gender, locality, school type, and classes handling influence teachers' digital competence to varying degrees. The research underscores the importance of continuous professional development and targeted training programs to enhance teachers' ability to integrate technology effectively in the classroom. Strengthening digital competence can improve teaching methodologies, student engagement, and overall educational outcomes. Educational policymakers and institutions should focus on bridging gaps in digital skills, providing adequate resources, and fostering a technology-friendly learning environment. By doing so, teachers can confidently embrace digital advancements, ensuring quality education that aligns with 21st-century learning demands.

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