



Empowering Educators in the Digital Age: A Comprehensive Study of Secondary School Teachers' Digital Competence

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Abstract:

This comprehensive study examines the digital competence of secondary school teachers, focusing on their proficiency, adaptability, and confidence in utilizing digital technologies for pedagogical purposes. Through a sample of 780 teachers from three districts in Andhra Pradesh, India, this research assesses teachers' digital competence across various dimensions: Technological/Operational/Instrumental, Information Processing and Management, Pedagogic/Knowledge Construction, and Digital Citizenship. The findings reveal that 83% of teachers exhibit moderate to very high levels of digital competence, emphasizing a notable proficiency in leveraging digital tools for teaching and learning. Significant differences are observed based on gender and locality, indicating varying degrees of digital competence influenced by exposure, resources, and access to technology. However, age and teaching subject show no significant impact on digital competence. The study underscores the importance of tailored professional development programs to enhance digital skills among educators, ensuring their effectiveness in an increasingly digital education landscape. This research offers valuable insights for policymakers, administrators, and teacher training programs to bridge the digital divide and improve teaching practices in the digital age.

Keywords: Digital competence, Secondary school teachers, Pedagogical technology, Professional development.

Introduction:

In an era marked by unprecedented technological advancements, the integration of digital tools and resources into education has become imperative for preparing students for the challenges of the 21st century. Secondary school teachers, serving as the cornerstone of the educational process, play a pivotal role in this paradigm shift towards digital learning environments. As the educational landscape continues to evolve, it becomes crucial to evaluate and enhance the digital competence of secondary school teachers.

This study delves into the intricate dimensions of digital competence among secondary school educators, exploring their proficiency, confidence, and adaptability in leveraging digital technologies for pedagogical purposes. Digital competence extends beyond mere technical proficiency; it encompasses the ability to critically assess and integrate technology to enhance teaching and learning experiences. As the educational ecosystem undergoes a transformation, teachers must be equipped not only with foundational digital skills but also with the capacity to harness technology for innovative and effective instruction.

The objectives of this research include assessing the current state of digital competence among secondary school teachers, identifying potential barriers to digital integration, and proposing strategies for professional development tailored to enhance teachers' digital proficiency. By scrutinizing the digital competence of secondary school

teachers, this study aims to contribute valuable insights to educational policymakers, administrators, and teacher training programs seeking to bridge the digital divide in classrooms and foster a more technologically adept teaching community. As we embark on this exploration of digital competence, it is evident that the outcomes will have far-reaching implications for the future of education in an increasingly digital world.

Significance of the study

Digital Competence consists of a variety of skills and competencies and its scope is wide covering media and communication, technology and computing, literacy and information science. Digital competence consists of technical skills and abilities to use digital technologies in a meaningful way for working, studying and for daily life in various general activities, abilities to critically evaluate the digital technologies and motivation to participate in the digital era.

The significance of a study on the interplay of digital competence, teacher effectiveness, and organizational commitment among secondary school educators lies in its multifaceted implications for education, teacher development, and the broader societal landscape. Digital competence encompasses a broad spectrum of skills, from technical proficiency to critical thinking and digital literacy. Understanding how these competencies relate to teacher effectiveness can inform strategies for enhancing the quality of education in secondary schools. This knowledge can lead to more effective teaching practices that engage students and improve learning outcomes.

As technology continues to advance, educators must be prepared to adapt and effectively use digital tools in their teaching. This study's findings can guide teacher training programs and professional development initiatives to equip teachers with the necessary digital competencies, ensuring they remain relevant and effective in the digital age.

Digital competence is not evenly distributed among educators, which can exacerbate educational inequalities. By identifying factors that contribute to digital competence, this study can shed light on disparities and inform strategies to bridge the digital divide among teachers. This is particularly important as equitable access to digital resources becomes increasingly crucial for students' success. In an increasingly globalized world, a digitally competent workforce is vital for economic competitiveness. The study can contribute to producing a more digitally adept generation of students who are better prepared to compete in the global job market.

The significance of this study lies in its potential to improve teaching practices, support teacher development, promote equity in education, and ensure that educational institutions are prepared for the demands of the digital age.

Objectives of the Study

1. To find out the Dimension wise and overall level of Digital Competence of Secondary School Teachers.
2. To find out whether the Digital Competence of Secondary School Teachers differ significantly with respect to a) Gender, b) Locality, c) Age Group, d) Teaching Subject

Methodology

The present study applies Descriptive Research Design. In terms purpose, it resembles a casual study, in which the sole aim is to elucidate the relationship between the study variables. This study analyzes the Digital Competence, Teacher Effectiveness and Teachers Organizational Commitment of Secondary School Teachers. From the selected sampling area comprising three districts, twenty secondary schools were selected and from each school 6 teachers from the science stream and 7 teachers from the arts stream were randomly selected for the study. Thus, from each district $13 \times 20 = 260$ teachers were selected. On the whole the selected 3 districts 780 sample respondents was drawn. The sampling area selected for the present study comprises three districts of the state of Andhra Pradesh, namely Bapatla, Prakasam, and Nellore districts.

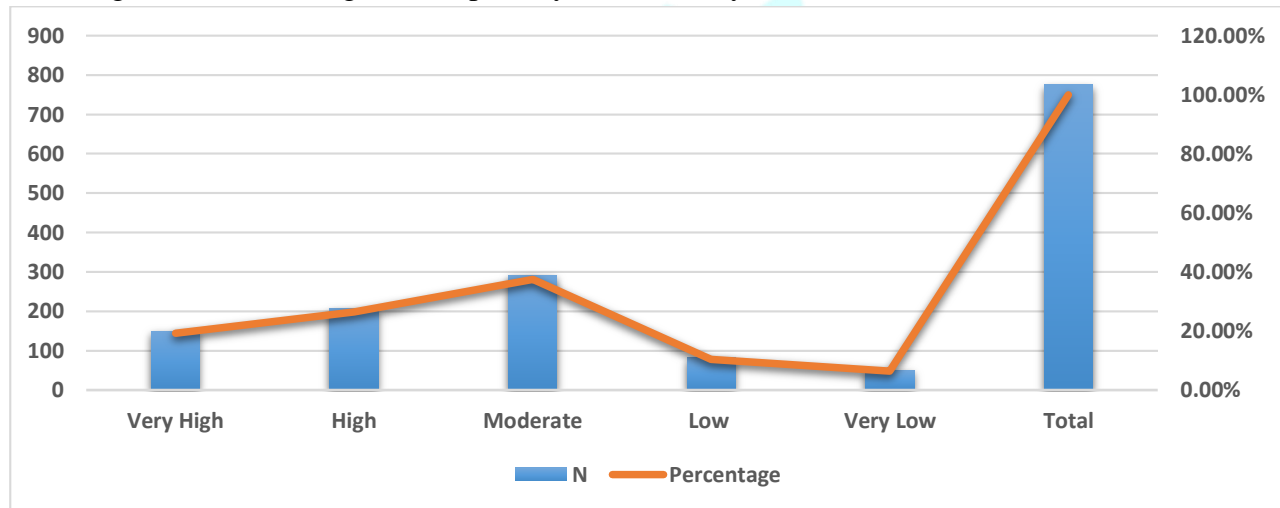
To collect the data Digital Competence Scale developed by Shipra Srivastava and Kiran Lata Dangwal was used the tool consists of 60 items The tool consists of statements related to Technological/Operational/ instrumental, Information process.

Hypotheses-1: The Secondary School Teachers do not possess the Digital Competency

Table 1: Describing the Levels of Digital Competency of Secondary School Teachers

Digital Competency	Very High	High	Moderate	Low	Very Low	Total
N	150	206	292	82	50	780
Percentage	19.23%	26.41%	37.4%	10.51%	6.45%	100%

Chart 1: Showing the Levels of Digital Competency of Secondary School Teachers

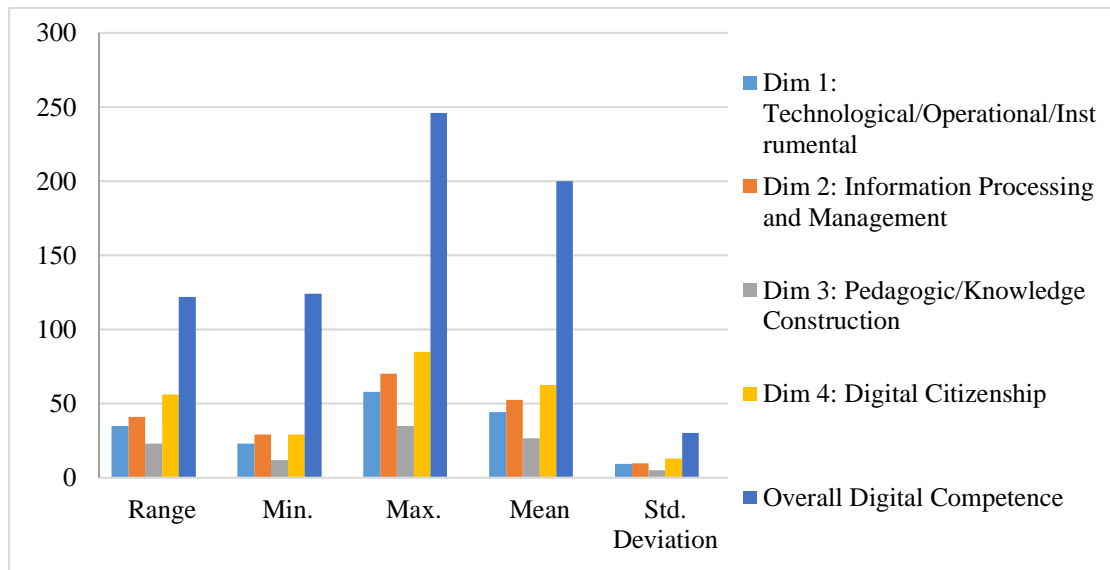


The Secondary School Teachers possess the Digital Competency as most of the Secondary school teachers i.e. 83% possess moderate to very high level of Digital Competency. The reason could be the high awareness and great skill of digital technology. It could also be reason that secondary school teachers has appropriate interest in digital literacy and very well use of technology in teaching and learning to make it interesting. Shipra (2020) conducted a study entitled digital competence and life skills' finding of this study support the finding of researchers study. The Secondary School Teachers do not possess the Digital Competency as most of the Secondary school teachers i.e. 83% possess moderate to very high level of Digital Competency.

Table 2: Describing the Dimension-wise Digital Competence of Secondary School Teachers

Variables	N	Range	Min.	Max.	Mean	S.D.
Dim 1: Technological/Operational/Instrumental	780	35.00	23.00	58.00	44.32	9.18
Dim 2: Information Processing and Management	780	41.00	29.00	70.00	52.56	9.80
Dim 3: Pedagogic/Knowledge Construction	780	23.00	12.00	35.00	26.70	5.20

Dim 4: Digital Citizenship	780	56.00	29.00	85.00	62.66	12.4
Overall Digital Competence	780	122.00	124.00	246.00	200.75	30.70



Graph 2: Showing the Dimension-wise Digital Competence of Secondary School Teachers

The secondary schoolteachers the mean score for Overall Digital Competence is 200.75 with a standard deviation of 30.70. The scores range from 124 to 246, indicating that the sample has a moderate range of overall digital competence. The sample appears to have moderate to wide ranges of skills related to different dimensions of digital competence, with a mean score for overall digital competence falling in the middle of the range.

The reason might be the less awareness of digital world and less competency of digital media which become hurdle in the way of their digital competence. Their less interest towards technology might be another reason. Shipra (2020) conducted a study entitled digital competence and life skills’ finding of this study support the finding of researchers study and parveena (2019) conducted a study entitled ‘attitude towards teaching competency and organisational commitment among secondary school teacher, finding of this study support the finding of the researchers study findings.

Hypotheses-1a: There would be no significant difference in Digital Competence of Secondary School Teachers with respect to their gender, b) Locality, c) Age Group, d) Teaching Subject.

Table 3: Description of difference of Digital Competence Scores with respect to the Gender

Gender	N	Mean	S.D.	t-value	Df	Significance
Male	371	33.75	9.01	2.37*	778	0.00*
Locality	409	35.29	9.09			
Rural	338	37.53	7.81	2.33*	778	0.00*
Urban	442	36.04	9.52			
Below years	25	369	33.96	8.92	778	0.00NS
Above years	25	411	34.05	9.09		

Science	374	33.95	9.05	0.46NS	778	0.00NS
Arts	406	34.25	9.07			

**Significant at 0.01 Level; NS: Not Significant at any Level

From the above table it is observed that there was significant difference in Digital Competence of Secondary School Teachers with respect to their gender, locality and there is no significant difference in age and teaching subject.

The reason could be that either male or female has high interest in digitalization and very well awareness and skill of technology and perfect use of computer and internet. The secondary school teacher of urban area has high digital competence as compared to rural teacher the reason could be greater and easily availability of technological gadgets for teaching and learning to make teaching and learning effecting. It might be reason that the teachers in urban area have high capacity and high storage smart phones and costly computers, laptop, and good speed internet. Shipra (2020) conducted a study entitled digital competence and life skills' finding of this study support the finding of researchers study.

Recommendations

The present study was conducted on a sample of secondary school teachers and similar studies may also be conducted at elementary teachers with different samples.

The present study was conducted on variables namely gender, subject specialization, medium of instruction, type of institution, teaching experience, usage of gadgets for teaching, internet enabled device usage, duration of the usage of gadgets. Studies can also be conducted on other variables for digital competence and Teacher Effectiveness on Teachers Organizational Commitment.

The present study was restricted to the pre service teacher of districts of Andhra Pradesh only. Similar studies can be taken in other districts of Andhra Pradesh state.

The studies could be conducted with digital intelligence, Teacher Efficacy on Teachers Organizational Commitment of secondary school teachers

Conclusions

Digital competence of secondary school teachers has huge significance as far as modern digital era is concerned because modern education entirely based on digital foundation in which maximum use of technology in order to impart education for lifelong learning and to make teaching and learning process interesting and effective.

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