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DIGITAL COMPETENCY OF THE MIDDLE SCHOOL TEACHERS

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Abstract

As technology advances and becomes increasingly integrated into our lives, teachers must consistently improve their digital proficiency, highlighting the escalating significance of digital skills in contemporary education. Digital competence is not simply a skill set; it is an essential requirement for teachers in a digitally saturated environment. While digital competency is crucial for teachers at all levels, it is particularly vital for middle school teachers. This survey collects data from teachers instructing students in grades VI to VIII across all topics. The present study used a survey strategy. The random sampling approach is utilized for data collection. The study featured a total of 120 teachers, comprising 61 male teachers and 59 female teachers. This questionnaire was modified for the research context by Cabero-Almenara and Palacios-Rodríguez (2020). The Digital Competence for Teachers tool comprises six dimensions: professional dedication, digital resources, pedagogy, evaluation and feedback, empowering learners, and enabling students' digital competency. The primary purpose of the study is to determine the significant mean differences among gender, internet usage, qualifications, and experience of teachers. The results indicated a significant mean across all analysed demographic variables. The digital competency of middle school teachers is crucial for equipping students to meet the demands of the contemporary world.

Keywords: *Teachers, Middle school, Digital Competency, Gender*

INTRODUCTION:

Our engagement with information is reshaped by digital technologies, which necessitates the adoption of new model of education. Various areas of education are being

altered by digital tools, which are causing instructors to shift from their traditional roles to those of facilitators of digital learning. These changes include instructional approaches and student participation. Teachers are required to continually improve their digital competence in order to bring attention to the growing significance of digital skills in contemporary education. This is because technology is always evolving and becoming more integrated into our everyday lives. Within the context of our increasingly digitalized world, digital competence is not only a collection of skills; rather, it is an absolute requirement for teachers. Not only does it require technical expertise, but it also necessitates the capacity to navigate and assess information critically, which is vital for prospering in a society so focused on knowledge. After examining various frameworks for the enhancement of digital competence, Ferrari (2012) describes Digcomp in her studies as 'digital competence is the set of knowledge, skills, attitudes including abilities, strategies, values and awareness, that are required when using ICT and digital media to perform tasks, solve problems, communicate, manage information, collaborate, create and share content, and build knowledge effectively, efficiently, appropriately, critically, creatively, autonomously, flexibly, ethically, reflectively for work, leisure, participation, learning, socializing, consuming, and empowerment'. According to the findings of the current research, digital competency can be broken down into six different dimensions: professional dedication, digital resources, pedagogy, evaluation and feedback, empowering learners, and facilitating the digital competency of academic students.

A commitment to teaching that makes use of digital technology resources to enhance the teaching process and engage professionally with colleagues, students, parents, and other members of the educational community is the first dimension, which is referred to as "professional commitment." Communication that is mediated by technology also makes it possible for individuals to make professional commitments, as well as for educational institutions to engage in collective and continual innovation. The individual's ability to recognize and modify educational content and resources, as well as to create digital resources that meet their teaching and learning objectives, is evaluated in the second dimension, which is referred to as digital resources. Additionally, the individual's responsibility to use digital content, including the protection of personal data and copyright rules, is evaluated and evaluated. Pedagogy is the third dimension. It is becoming increasingly vital to be able to conceive, plan, and implement the use of digital technology throughout the course of the teaching process. At the same time, it is also important to encourage student-centred approaches and practices in keeping with their pedagogy. When it comes to evaluation and

feedback, the fourth dimension is the ability to adopt a variety of assessment strategies through the utilization of digital technologies, as well as shifts in existing assessment strategies.

Additionally, the ability to comprehend how digital technologies contribute to the enhancement of existing evaluation strategies and contribute to the adoption of better and new assessment strategies in accordance with the feedback received during the teaching-learning process is essential. The fifth component is called "Empowering Learners," and it focuses on the ability of teachers to improve students' interest in learning the subject matter, increase their active participation in learning activities, and meet their learning needs through the utilization of digital technology. The sixth and final dimension is called "Facilitating the Digital Competency of Students." This dimension focuses on the extent to which teachers are aware of the most recent technological tools and how they can facilitate their students' learning through the use of digital technology. Additionally, it also empowers students to improve their academic performance and overall performance.

REVIEW OF RELATED LITERATURE:

Education is the most effective and established means of attaining sustainable development goals. To realize this objective, the vision of 21st-century learning skills emphasizes the digitalization of pedagogical methodologies and teaching-learning practices. The Odisha government's plan emphasizes ICT-enabled classrooms with new digital tools and infrastructure; nonetheless, there has been only marginal enhancement in teaching practices. The study conducted by Mitali Swain (2024) aims to examine the digital competency levels of government school teachers utilizing the DigCompEdu self-reflection tool. The tool encompasses 25 things across 7 domains. The researcher employed a quantitative survey methodology, utilizing a sample of 50 individuals employed in government schools in Odisha. The study reveals that the majority of samples, specifically 30%, fall within a singular competency level of digital proficiency, indicating that they are newcomers with the potential to improve their skills through digital technology.

The research conducted by Karan Kumar and Shaveta Sharma (2024) investigated digital competency about gender, location, and kind of institution among 500 secondary school teachers. The data was gathered via the Digital Competence Scale developed by Shipra Shrivastva and Kiran Lata Dangwal. The study's findings indicated a notable disparity in digital competence among (i) male and female secondary school teachers, with male teachers exhibiting greater digital proficiency; (ii) urban and rural secondary school teachers, with urban teachers demonstrating superior digital competence; and (iii) secondary school teachers from

government and private institutions, with private school teachers possessing higher digital competence.

The extensive research conducted by Pallapati Babu and Esther Suneela (2023) investigates the digital competency of secondary school teachers, emphasizing their proficiency, adaptability, and confidence in employing digital tools for instructional objectives. This research evaluates the digital competence of 780 teachers from three districts in Andhra Pradesh, India, across multiple dimensions: Technological/Operational/Instrumental, Information Processing and Management, Pedagogic/Knowledge Construction, and Digital Citizenship. The results indicate that 83% of teachers demonstrate moderate to very high levels of digital competence, highlighting a significant ability to utilize digital resources for educational purposes. Marked disparities are seen for gender and locality, reflecting differing levels of digital competence shaped by exposure, resources, and technological availability. Nonetheless, age and subject taught exhibit no substantial influence on digital proficiency. The study highlights the necessity of customized professional development programs to improve teachers' digital skills, hence ensuring their efficacy in a more digital educational environment.

NEED AND IMPORTANCE OF THE STUDY

The educational institution feels that a mixed teaching strategy is required following the COVID-19 epidemic. Digital competency entails not just utilizing new and developing digital technology but also engaging with the global society of the twenty-first century, where a wealth of information via the internet and various technologies is impacting students' lives both in and outside of the classroom. In order to facilitate the shift from face-to-face classroom transactions to a virtual learning environment, teachers' digital proficiency, experiences, and technology self-efficacy are essential for sustainable development (Ogodo et al., 2021). For the new, creative educational model to achieve its objectives, teachers must possess sufficient digital competency (Li and Yu, 2022). With the aid of integrated and creative pedagogy and in-service training, the teacher must reinvent themselves in order to satisfy the changing demands of the teaching and learning process. Teachers must use prudent digital technology mobilization to get ready for student-centered learning (Sa and Serpa, 2020).

Teachers can access more pertinent instructional resources and have more possibilities for problem-solving and cooperation when they possess sufficient digital competency (Alkhateeb et al., 2017). A digitally competent individual, according to Newman, "has effective ICT skills, an ability to critically evaluate information, and social awareness." One can safely

locate and/or publish digital resources using the most widely used technology, usually the internet.

Digital competency is crucial for teachers at all levels, but it is especially important for middle school instructors. Students who want to succeed in their personal and professional endeavors and meet the demands of a constantly changing digital environment must have access to online learning materials, collaborate with peers online, and engage in interactive learning activities that go beyond traditional teaching methods. As a result, it is crucial that middle school instructors develop their digital literacy. Students that are proficient in this area are better able to evaluate material critically, use their critical thinking abilities, and successfully handle complex problems. Students' topic learning and ICT use in the classroom are positively impacted by teachers who are adept in digital technology. Middle school teachers are essential to this paradigm shift towards digital learning environments since they are the cornerstone of the educational process. It is imperative to assess and improve secondary school teachers' digital competency as the educational landscape changes.

RESEARCH QUESTIONS:

1. Is there is any significant mean difference between the male and female teachers in the dimensions of digital competency namely professional commitment, digital resources, pedagogy, evaluation and feedback, empowering learners, facilitating the digital competency of students and in the overall total for digital competency?
2. Is there is any significant mean difference between the teachers either use internet or not in the dimensions of digital competency namely professional commitment, digital resources, pedagogy, evaluation and feedback, empowering learners, facilitating the digital competency of students and in the overall total for digital competency?
3. Is there is any significant mean difference among the qualification of the teachers in the dimensions of digital competency namely professional commitment, digital resources, pedagogy, evaluation and feedback, empowering learners, facilitating the digital competency of students and in the overall total for digital competency?
4. Is there is any significant mean difference among the experience of the teachers in the dimensions of digital competency namely professional commitment, digital resources, pedagogy, evaluation and feedback, empowering learners, facilitating the digital competency of students and in the overall total for digital competency?

METHODOLOGY

The survey method is adopted for the study among the school teachers belongs to the Tamil Nadu State Government schools. The data is collected from the teachers who were handling the class from VI to VIII standard of all the school subjects. Survey method is adopted for the present study. Random Sampling technique is applied for the data collection. The data is collected from male teachers (61) and female teachers (59), totally 120 teachers were involved in the present study. The tool used for the study is DigCompEdu Check-In instrument. This questionnaire was adapted to the Spanish context by Cabero-Almenara and Palacios-Rodríguez (2020). The data is analysed by SPSS analysis. The differential analysis were done for the study with respect to gender, internet user, qualification of the teachers and experience of the teachers.

ANSWERS TO THE RESEARCH QUESTIONS AND DISCUSSION:

1. *Is there is any significant mean difference between the male and female teachers in the dimensions of digital competency namely professional commitment, digital resources, pedagogy, evaluation and feedback, empowering learners, facilitating the digital competency of students and in the overall total for digital competency?*

(N = 120)

Variables and its Dimensions	**Gender**				**'t' value**	**Level of Significance**
	Male Teachers (N=61)		**Female Teachers (N=59)**			
	Mean	**S.D**	**Mean**	**S.D**		
Professional Commitment	9.53	1.826	7.90	2.156	9.300	**P<0.001**
Digital Resources	9.78	1.995	7.29	2.742	11.820	**P<0.001**
Pedagogy	9.86	2.021	7.39	2.817	11.468	**P<0.001**
Evaluation and Feedback	10.52	2.362	7.55	3.127	12.238	**P<0.001**
Empowering Learners	10.70	2.078	8.60	2.839	9.624	**P<0.001**
Facilitating the Digital Competency of Students	11.08	1.458	9.51	1.852	10.700	**P<0.001**
Overall total for Digital Competency of the Teachers	111.85	18.570	86.99	27.958	11.953	**P<0.001**

It is found that there is a significant mean difference between the male and female teachers in their professional commitment, digital resources, pedagogy, evaluation and feedback, empowering learners, facilitating the digital competency of students and in the overall total for digital competency of the teachers at 1% level. However, it is reported that male teachers are better than the female teachers in all the dimensions and total of digital competency. This present finding is corroborate with the findings of Fernandez-Batanero and Colmenero-Ruiz (2016), explored teachers' attitudes towards ICT and inclusive education in secondary schools. The findings indicate that teachers, particularly male teachers, exhibit a favorable outlook towards ICT, with increased opportunities for engagement with this technology. Whereas the present finding contradict with study conducted by Choudhary (2024), which is studied the impact of gender and type of school on the digital competence of teachers in secondary schools. Female secondary school teachers have superior digital competency compared to male secondary school teachers.

2. *Is there is any significant mean difference between the teachers either use internet or not in the dimensions of digital competency namely professional commitment, digital resources, pedagogy, evaluation and feedback, empowering learners, facilitating the digital competency of students and in the overall total for digital competency?*

(N = 120)

Variables and its Dimensions	**Internet User**				**'t' value**	**Level of Significance**
	Yes (N=65)		**No (N=55)**			
	Mean	**S.D**	**Mean**	**S.D**		
Professional Commitment	8.89	2.085	8.50	2.223	2.074	**P<0.005**
Digital Resources	8.98	2.572	8.01	2.757	4.111	**P<0.001**
Pedagogy	9.02	2.597	8.15	2.839	3.651	**P<0.001**
Evaluation and Feedback	9.60	3.000	8.36	3.180	4.588	**P<0.001**
Empowering Learners	9.98	2.594	9.26	2.771	3.066	**P<0.001**
Facilitating the Digital Competency of Students	10.53	1.759	10.01	1.896	3.242	**P<0.001**
Overall total for Digital Competency of the Teachers	103.49	25.243	94.58	27.772	3.829	**P<0.001**

It is observed that there is a significant mean difference between the teachers who use internet and not in their digital resources, pedagogy, evaluation and feedback, empowering learners, facilitating the digital competency of students and in the overall total for digital competency of the teachers at 1% level. Whereas, professional commitment is significant at 5% level. However, it is reported that male teachers are better than the female teachers in all the dimensions and total of digital competency.

3. *Is there is any significant mean difference among the qualification of the teachers in the dimensions of digital competency namely professional commitment, digital resources, pedagogy, evaluation and feedback, empowering learners, facilitating the digital competency of students and in the overall total for digital competency?*

(N = 120)

Variables and its Dimensions	**Qualification of the Teachers**						**'f' value**	**Level of Significance**
	B.Sc./B.A/B.Ed. **(N=31)**		M.sc/ M.A/ B.Ed. **(N=52)**		M.sc/ M.A/ M.Ed. **(N=37)**			
	Mean	**S.D**	**Mean**	**S.D**	**Mean**	**S.D**		
Professional Commitment	7.52	2.109	8.68	2.148	9.39	1.907	27.910	**P<0.001**
Digital Resources	7.03	2.706	8.58	2.720	9.29	2.330	26.071	**P<0.001**
Pedagogy	7.00	2.693	8.69	2.772	9.42	2.347	29.243	**P<0.001**
Evaluation and Feedback	7.40	3.200	8.94	3.174	10.01	2.678	25.826	**P<0.001**
Empowering Learners	8.03	2.568	9.72	2.683	10.44	2.404	30.077	**P<0.001**
Facilitating the Digital Competency of Students	9.28	1.806	10.35	1.856	10.77	1.624	24.372	**P<0.001**
Overall total for Digital Competency of the Teachers	83.24	26.615	99.56	27.156	107.85	22.243	32.008	**P<0.001**

It is perceived that there is a significant mean difference among qualification of the teachers in their professional commitment, digital resources, pedagogy, evaluation and feedback, empowering learners, facilitating the digital competency of students and in the overall total for digital competency of the teachers at 1% level. Moreover, it is reported that M.sc/ M.A/ M.Ed. qualified teachers are better than the M.sc/ M.A/ B.Ed. qualified teachers followed by B.Sc./B.A/B.Ed qualified teachers in all the dimensions and total of digital competency.

4. *Is there is any significant mean difference among the experience of the teachers in the dimensions of digital competency namely professional commitment, digital resources, pedagogy, evaluation and feedback, empowering learners, facilitating the digital competency of students and in the overall total for digital competency?*

(N = 120)

Variables and its Dimensions	**Experience of the Teachers**						**'f' value**	**Level of Significance**
	Below 5 years (N=31)		**Between 5 – 10 years (N=52)**		**Above 10 years (N=37)**			
	Mean	**S.D**	**Mean**	**S.D**	**Mean**	**S.D**		
Professional Commitment	8.31	2.236	8.99	2.076	8.53	2.181	4.766	**P<0.001**
Digital Resources	7.85	2.743	8.85	2.605	8.50	2.749	5.639	**P<0.001**
Pedagogy	8.02	2.878	8.93	2.628	8.56	2.772	4.479	**P<0.001**
Evaluation and Feedback	8.30	3.196	9.37	3.039	9.01	3.210	4.636	**P<0.001**
Empowering Learners	8.77	2.761	10.04	2.579	9.63	2.714	9.111	**P<0.001**
Facilitating the Digital Competency of Students	9.94	1.915	10.50	1.783	10.21	1.843	3.931	**P<0.005**
Overall total for Digital Competency of the Teachers	92.43	27.731	102.85	25.411	98.67	27.505	6.225	**P<0.001**

It is perceived that there is a significant mean difference among experience of the teachers in their professional commitment, digital resources, pedagogy, evaluation and feedback, empowering learners and in the overall total for digital competency of the teachers at 1% level. Whereas, facilitating the digital competency of students is observed to be significant at 5% level. Moreover, it is reported that between 5-10 years of experience teachers are better than the teachers followed by below 5 years experienced teachers in all the dimensions and total of digital competency.

CONCLUSION

As far as modern digital era is concerned digital competence of teachers is highly needed 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 effectives. As technology continues to advance, teachers must

be prepared to adapt and effectively use digital tools in their teaching. The digital competence of the teachers at the middle school level is essential for preparing students for the demands of the modern world. It provides them with the expertise they require to succeed academically, professionally, and personally in an ever-evolving digital society. Schools and teachers must prioritize the development of digital competence among students to ensure their future success. And this is possible only if we have digitally competent teachers at the middle school level. This study lies in its potential to improve teaching, support teacher development, promote equity in education, and ensure that educational institutions are prepared for the demands of the digital age.

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