**Digital Competency Skills among Secondary School Teachers working in Tribal Areas in relation to Demographic Variables, Odisha, India**

**ABSTRACT**

This study investigates the digital competency skills of secondary school teachers in the tribal regions of Western Odisha. It aims to assess overall digital proficiency and examine differences based on gender, caste category, marital status, and teaching experience. The study employed a quantitative, descriptive survey design to acknowledge the vital role of digital proficiency and job satisfaction in enhancing educational outcomes. The sample comprised 459 secondary school teachers, selected from 50 randomly chosen schools located in tribal areas across Western Odisha. Efforts were made to ensure a representative distribution across gender, caste category, marital status and teaching experience. Data were collected using the standardized Teachers’ Digital Competency Scale (TDCS) by Ergul & Tasar (2023), which measures skills across three domains: sharing and communication, socio-cultural engagement, and professional engagement, using a 5-point scale. The findings revealed significant variations in digital competency based on demographic factors. Male, unmarried, and less experienced teachers demonstrated notably higher levels of digital proficiency. Younger teachers, in particular, exhibited stronger digital skills, suggesting a greater familiarity with technology. Among caste groups, Scheduled Tribe (ST) teachers reported the highest digital competency scores, although the differences across caste categories were not statistically significant. These findings emphasize the importance of integrating digital literacy and technological support into teacher training programs, particularly for female and senior educators, who were found to have comparatively lower digital skills. The study concludes by emphasizing the need to enhance digital competencies to boost teacher performance and student learning outcomes in tribal areas. It recommends targeted professional development, mentorship initiatives, and supportive policy measures to empower educators in these underserved regions.

*Keywords: Digital competency skills, Digital Competency Skills, Teachers, Secondary School Teacher, Tribal Areas, Western Odisha.*

**1. INTRODUCTION**

Education acts as a catalyst for socioeconomic growth and is essential in promoting social mobility and justice. The ability to break the cycle of poverty via access to high-quality education gives people from underprivileged origins the chance to rise above their circumstances and achieve their goals. Equal access to educational opportunities and resources can help society reduce inequality and promote inclusion. Education also helps people to challenge conventional wisdom and support positive change, therefore; helping to build a more just society. Therefore, spending money on education is an investment in everyone's future as well as in the general well-being of society. Education has a complex impact on all facets of academic, social, and personal development in the setting of student life. Students participate in planned learning activities in the classroom that help them acquire critical abilities like resilience, cooperation, and communication in addition to subject-specific information (Bertrand et al., 2020). Education encourages students to follow their passions, hobbies, and talents by giving them chances for self-discovery and exploration outside of the classroom (Vasoya, 2023). Additionally, education facilitates socialization by exposing kids to a range of viewpoints, cultures, and ideas, which promotes tolerance, empathy, and a sense of place in the world (Sakallı et al., 2021). Additionally, education gives people the knowledge and skills they need to function in a world that is getting more complicated and interconnected by the day. In the quickly changing world of today, when globalization and technology breakthroughs are reshaping industries and societies, a solid educational foundation is more important than ever (Volti et al., 2024). People who have an education can accept change, welcome innovation, and prosper in dynamic circumstances (Serdyukov, 2017). It gives individuals the ability to critically evaluate information, separate fact from fiction, and arrive at wise judgments. In addition, education promotes a culture of lifelong learning, which pushes people to keep learning new things to be competitive and relevant in the job (Mustafa et al., 2024). Thus, education promotes economic growth, creativity, and societal advancement in addition to improving lives on a personal level. Education is essential to human development and student life because it promotes individual development, societal advancement, and economic prosperity. People gain perspectives, abilities, and information from education that enable them to follow their passions, succeed in life, and make significant contributions to society. Education, in the framework of student life, offers a forum for intellectual, social, and personal growth, transforming people into involved, knowledgeable, and capable citizens. Investing in education is essential as we face global problems and possibilities in the twenty-first century. This will ensure that the next generation has the skills and knowledge necessary to prosper in a world that is changing constantly (Malik, 2018).

The capacity to use digital technology successfully and efficiently to accomplish particular goals is referred to as digital competency skills (Spante et al., 2018). These abilities encompass a blend of technical, cognitive, and social skills that enable people to use digital tools for problem-solving, creation, communication, and teamwork. Because digital technologies are so commonplace in both our personal and professional lives, digital competency skills are becoming more and more crucial in today's society (Brolpito, 2018). In the twenty-first century, digital Competency has emerged as a core skill set, required not just for personal growth but also for professional success and societal involvement. The fast growth of technology and its widespread incorporation into daily life have made digital skills vital in a variety of fields. Digital is the capacity to use several digital tools to efficiently and critically gather, assess, and generate information. it is important to digital Competency. In an age where information is readily available online, people with digital literacy skills are better able to distinguish between trustworthy sources and falsehoods. This is especially important considering the prevalence of false news and biased information. Digital literacy enables people to make informed decisions in their personal life, educational pursuits, or professional careers by developing critical thinking and analytical skills. Furthermore, digital Competency promotes human growth by enabling lifelong learning. Online platforms provide a wealth of tools for self-improvement and skill acquisition, including anything from academic disciplines to practical skills such as coding or graphic design. This accessibility democratizes education, allowing people of all backgrounds to seek knowledge and professional development at their own speed. As traditional education institutions grow and adapt, digital skills allow students to supplement formal education with informal, yet equally useful, learning opportunities.

In recent years, digital competency skills with a focus on its impact on the effectiveness of teaching, productivity in research, teacher education, and professional development has been widely studied in an educational context. An extensive literature review was conducted, revealing several key findings about teachers' digital literacy and how it impacts their professional practice. Contrarily, numerous studies suggest that the pre-service teachers show a good level of digital competency skills in certain facets, like choosing suitable digital resources, participating in digital pedagogical practices, and self-reflection in teaching. Benali et al., (2018) indicate that teachers exhibit proficiency in their areas but often face challenges in digital assessment and creating digital content. Such gaps indicate the need to address these deficiencies and also indicate the need for targeted professional development. Several research or studies indicate the positive association between high levels of digital competency skills and research productivity. Yazon et al. (2019) found that teachers who are more advanced in digital competency skills are more productive in research activities. This indicates that digital competency is not only essential for teaching but also for scholarly engagement. However, the digital skills are not the same across the globe. Cebi & Reisoglu (2020) discovered that the pre-service teachers' digital competency skills differed significantly based on gender and fields of study. These differences indicate the need for digital literacy training that considers discipline-specific and demographic factors. The relationship between digital competency skills and teaching effectiveness has also been investigated in the context of e-learning platforms. Osuji & Aranilewa (2022) found that teachers who had strong digital literacy, communication, and content creation skills could use e-learning platforms effectively. This finding highlights the importance of digital literacy to access to technology and also the skills to integrate it into the pedagogical practices. Similarly, Kaur & Sharma (2022) found that research scholars demonstrate higher digital competency skills who are from engineering, science, and management than those from education and languages. This indicates that the types of discipline also play a significant role in shaping digital skills.

Researching tribal teachers' digital competency skills is extremely important considering how quickly the educational landscape is changing nowadays. These teachers work in underprivileged and marginalized communities where there may be limited access to conventional educational resources. In these kinds of situations, adopting digital competency empowers educators while also enhancing the educational opportunities for their pupils. Tribal educators who possess digital competency are better able to create interactive and captivating lessons. They can accommodate different learning styles in their classrooms by using educational apps, online resources, and multimedia presentations. This adaptability improves their efficacy as teachers, encouraging students to comprehend and retain things at a deeper level. Traditional educational materials like textbooks and libraries may not be readily available in isolated tribal areas. Teachers can take advantage of the extensive library of online instructional resources by developing their digital competency abilities. In order to give students, access to a wider variety of learning resources, they can augment their teaching materials with e-books, academic journals, and instructional videos. Teachers and students benefit from increased digital literacy when digital competency is introduced into tribal schools. By being acquainted with digital tools and technology, educators may convey crucial digital skills to their pupils. This covers the fundamentals of computer literacy, internet usage, and using critical thinking to the assessment of online content. In the digital age we live in today, these abilities are more important than ever since they enable pupils to thrive in a linked society. Considering the research gaps in terms of knowledge, evidence and findings, this present study was undertaken.

**1.1 Objectives of the Study**

1. To study the level of digital competency skills among secondary school teachers working in tribal areas
2. To compare the digital competency skills of secondary school teachers working in tribal areas with reference to gender, category, marital status and year of teaching experience

**1.2 Hypotheses of the Study**

1. There exists no significant difference in the digital competency skills of secondary school teachers working in tribal areas with reference to gender.
2. There exists no significant difference in the digital competency skills of secondary school teachers working in tribal areas with reference to category.
3. There exists no significant difference in the digital competency skills of secondary school teachers working in tribal areas with reference to marital status.
4. There exists no significant difference in the digital competency skills of secondary school teachers working in tribal areas with reference to year of teaching experience.

**1.3 Delimitations of the Study**

* The present study was delimited to the digital Competency skills among secondary school teachers working in tribal areas.
* The present study was delimited to the tribal areas of Western Odisha i.e., Sambalpur, Jharsuguda, Sonepur, Deogarh, Jharsuguda, Sundergarh, Bargarh, Balangir.
* The present study was delimited to some demographic variables like gender, category, marital status and year of teaching experience etc.

**2. METHODOLOGY**

* **2.1 Nature of Study**
* The present study was quantitative in nature as the main purpose was to study digital competency skills among secondary school teachers working in tribal areas.
* **2.2 Method and Design**
* Since the present study was based on an assessment of digital competency skills among secondary school teachers working in tribal areas, the descriptive survey method was used.
* **2.3 Population & Sample**
* All the secondary school teachers working in Western Odisha were the population of the present study. Out of all the secondary schools of Western Odisha, a total number of 50 secondary schools were selected randomly and all the teachers working in the selected schools were taken into account as the sample of the present study. The total number of sample of the study was 459 secondary school teachers working in tribal areas of Odisha. Care was taken to cover the sample groups in terms of gender, category, marital status and year of teaching experience. The table-1 below shows the sample size with reference to demographic variables.

**Table 1. Variable wise distribution of sample with N and percentages**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Levels** | **N** | **Percentage** |
| Gender | Male | 235 | 51.19% |
|  | Female | 224 | 48.80% |
| Teaching Experience | High | 223 | 48.58% |
|  | Low | 236 | 51.41% |
| Marital Status | Married | 236 | 51.41% |
|  | Unmarried | 223 | 48.58% |
| Category | ST | 126 | 27.45% |
|  | SC | 134 | 29.19% |
|  | OBC | 119 | 25.92% |
|  | GEN | 80 | 17.42% |

**2.4 Tool and Techniques**

A standardized Digital Competency Scale (Ergul & Tasar, 2023) was used in this study. Ergul & Tasar (2023) followed standard procedure to develop and validate Teacher’s Digital Competency Scale (TDCS) after conducting a critical analysis of related literature and theoretical framework related to digital Competency. Content analysis was made and items were generated from the related literature regarding digital Competency. Then the generated items were sent to experts for their review based on its areas. Exploratory factor analysis was run by the developers by taking 120 samples covering gender, experience and subject areas. Based on the expert judgement and pilot study on 200 samples, 20 items were included in factor analysis. TDCS's final version includes content validity for recognizing educators who are skilled with digital technologies. Respondents use this scale to rate how and how frequently they utilize digital technologies in schooling. Thus, those in charge of administering the TDCS can evaluate practitioners' and teachers' digital technology abilities. TDCS assesses teachers' abilities to use digital technology in the classroom. This situation helps both practitioners and educators. TDCS helps detect instructors' strengths and shortcomings in digital Competency. Teachers may become aware of their digital literacy and begin to question and enhance themselves. Practitioners can utilize TDCS to analyze needs, create programs, and provide resources for teacher education and development. The Cronbach Alpha value of the final TDCS was found to be 0.949, which revealed high reliability index. (Ergul & Tasar, 2023).

**2.5 Statistical Techniques**

To achieve the objectives of the study and analyse the collected data, descriptive statistics such as mean and standard deviation were used to summarize the data, while inferential statistics including independent sample t-tests and one-way ANOVA were applied to examine the significance of differences in mean scores between groups.

**3. Data Analysis & Results**

**3.1 Descriptive Analysis:**

Variable-wise N and Mean scores of digital competency skills are mention in Table-2 and Fig-1

**Table 2. Variable-wise N and Mean scores of digital competency skills**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Levels** | **N** | **Mean** |
| Gender | Male | 235 | 70.12 |
|  | Female | 224 | 63.99 |
| Teaching Experience | High | 223 | 70.21 |
|  | Low | 236 | 73.91 |
| Marital Status | Married | 236 | 69.56 |
|  | Unmarried | 223 | 75.58 |
| Category | ST | 126 | 70.98 |
|  | SC | 134 | 69.56 |
|  | OBC | 119 | 70.32 |
|  | GEN | 80 | 69.04 |

**Fig. 1. Variable-wise Mean scores of digital competency skills**

**3.1.1 Descriptive Results of Digital competency skills in terms of Gender**

The data presented offers valuable insights into the digital competency skills of secondary school teachers working in tribal areas of Odisha, categorized by gender, teaching experience, marital status, and caste. Gender-wise, male teachers (mean score of 70.12) exhibit higher digital competency skills than their female counterparts (mean score of 63.99). This discrepancy could suggest that male teachers have more access to, or familiarity with, digital tools, possibly due to socio-cultural factors or differences in training opportunities available to male and female teachers in these areas(Table-3 & Fig-2).

**3.1.2 Descriptive Results of Digital competency skills in terms of Category**

The data on the digital competency skills of secondary school teachers working in tribal areas of Odisha provides an insightful understanding of how different social groups are performing in terms of their digital skills. The study categorizes teachers into four groups—Scheduled Tribes (ST), Scheduled Castes (SC), Other Backward Classes (OBC), and the General (GEN) category—while assessing their mean digital competency skills scores. Among the four categories, the ST category has the second-highest number of teachers (N = 126) with a mean digital competency skills score of 70.98, the highest among all groups. This suggests that ST teachers are comparatively more digitally competent than their counterparts. This could indicate a strong inclination among ST teachers toward adopting digital tools in education or could be a result of targeted interventions and digital literacy programs focused on tribal educators. The higher digital competency skills among ST teachers is a positive indicator, as it reflects their ability to integrate technology into teaching, which is essential for improving education in remote tribal areas. The SC category has the highest representation in the study (N = 134) but a lower mean digital competency skills score of 69.56. Despite having the largest number of teachers surveyed, their digital competency skills is lower than that of ST teachers. This suggests that while there is greater participation from SC teachers in the education sector, there may be gaps in access to quality digital training or resources that impact their competence levels. It also indicates a need for enhanced digital literacy programs for SC teachers to ensure they can effectively utilize technology in teaching and learning. The OBC category, consisting of 119 teachers, has a mean digital competency skills score of 70.32, which is higher than that of SC and GEN teachers but lower than ST teachers. The relatively higher score of OBC teachers suggests a moderate level of digital proficiency, indicating that they are fairly equipped to use digital tools in their professional practices. However, their score being lower than ST teachers suggests that additional digital training programs and resources may further enhance their skills and effectiveness in classrooms. The General category has the lowest number of teachers (N = 80), with a mean digital competency skills score of 69.04, which is the lowest among all groups. The comparatively lower digital competency skills of teachers in this category is an interesting finding, as it challenges the common assumption that teachers from the General category might have better access to digital resources. This lower score may indicate disparities in engagement with digital tools, lack of digital literacy initiatives targeted at this group, or variations in motivation and willingness to adapt to digital advancements in education.(Table-4 & Fig-3)

Overall, the data reveals that digital competency skills among secondary school teachers in tribal areas of Odisha varies across social categories. The highest competence is observed among ST teachers, followed by OBC, SC, and GEN teachers. While the relatively high digital competency skills of ST teachers are a positive development, the lower scores among SC and GEN teachers indicate the need for targeted interventions. These findings emphasize the importance of providing equal opportunities for digital training across all categories, ensuring that teachers are well-equipped to integrate technology into their teaching practices. Policymakers and educational institutions must focus on bridging these digital competency skills gaps to enhance the overall quality of education in tribal regions of Odisha.

**3.1.3 Descriptive Results of Digital competency skills in terms of Marital Status**

Regarding **marital status**, unmarried teachers (mean score of 75.58) outperform married teachers (mean score of 69.56). This difference might be attributed to the different personal responsibilities of married and unmarried teachers. Unmarried teachers may have more time and flexibility to focus on professional development and digital skills acquisition, whereas married teachers may face additional domestic responsibilities that limit their opportunities for such growth(Table-5 & Fig-4).

**3.1.4 Descriptive Results of Digital competency skills in terms of Teaching Experience**

When looking at teaching experience, a surprising trend emerges: teachers with **low experience** (mean score of 73.91) outperform those with **high experience** (mean score of 70.21). This might reflect the increasing integration of technology in education and newer teachers potentially receiving more up-to-date training or being more adaptable to digital learning tools. It could also imply that older, more experienced teachers may not have had as much exposure to newer technologies during their careers(Table-6 & Fig-5).

**3.2 Comparative Analysis of Digital Competency Skills**

In the present study, gender, teaching experience, marital status and category were taken as demographic variables. Based on the levels of the variables the comparative analysis has been made which are presented below.

**3.2.1 Comparative analysis of Digital competency skills in terms of Gender**

**Table 3. Gender wise N, Mean, SD, df and t-value of digital competency skills**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Gender | N | Mean | SD | Df | t-test | p-value | Remarks |
| Male | 235 | 70.12 | 11.875 | 457 | 2.98 | .000 |  |
| Female | 224 | 63.99 | 13.040 |

**Fig. 2. Gender-wise N & Mean scores of digital competency skills**

The data compares the male and female groups on digital competency skills with a total sample size of 235 males and 224 females. The mean score for males is 70.12, with a standard deviation of 11.875, while females have a mean score of 63.99 and a standard deviation of 13.040. the t-test assessed the difference between the two groups, yielding a t-value of 2.98 and a p-value of 0.000. The p-value is well below the commonly used significance level of 0.05, indicating that the difference between the mean scores of males and females is statistically significant. This suggests that, on average, males score higher than females on the measured variable. The relatively small standard deviation for males indicates less variability in their scores, whereas the higher standard deviation for females suggests more variation in their scores. These results may imply that gender influences the measured variable, with males outperforming females on average.

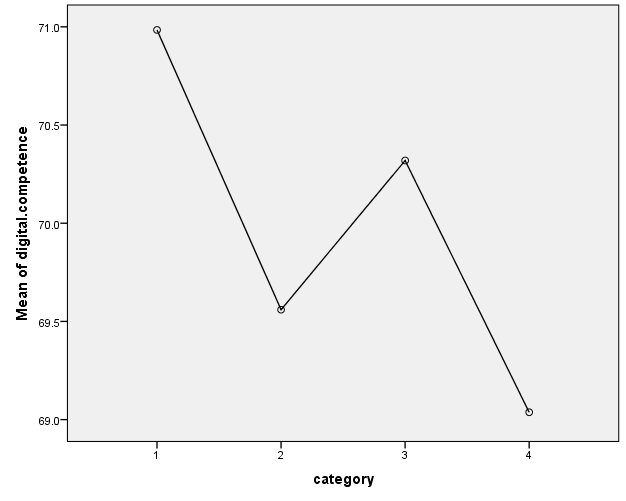
**3.2.2 Comparative analysis of Digital competency skills in terms of Category**

**Table 4 (a) Descriptive statistics of Comparative analysis of Digital competency skills in terms of Category**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Category** | **N** | **Mean** | **Std. Deviation** | **Std. Error** | **Minimum** | **Maximum** |
|
| ST | 126 | 70.98 | 12.357 | 1.101 | 39 | 92 |
| SC | 134 | 69.56 | 14.784 | 1.277 | 8 | 94 |
| OBC | 119 | 70.32 | 12.710 | 1.165 | 38 | 91 |
| UR | 80 | 69.04 | 14.017 | 1.567 | 29 | 91 |
| Total | 459 | 70.06 | 13.460 | .628 | 8 | 94 |

**Table 4. (b) Results of One-way-ANOVA**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ANOVA** | | | | | |
| Digital competency skills | | | | | |
|  | Sum of Squares | Df | Mean Square | F | Sig. |
| Between Groups | 232.784 | 3 | 77.595 | .427 | .734 |
| Within Groups | 82739.744 | 455 | 181.846 |  |  |
| Total | 82972.527 | 458 |  |  |  |



**Fig. 3. Category wise N & Mean scores of digital competency skills**

The ANOVA table provides insights into the differences in digital competency skills among secondary school teachers in tribal areas of Odisha, based on group comparisons. The **Between Groups** sum of squares (232.784) refers to the variation in digital competency skills scores across different categories (such as gender, teaching experience, marital status, and caste). The **Within Groups** sum of squares (82739.744) reflects the variation within each group. The F-statistic (0.427) is a ratio of the variance between groups to the variance within groups. With an F-value this low, the result suggests that the variation between the groups is not significant enough to conclude that any of the groups differ significantly from one another in terms of digital competency skills. The **p-value (0.734)**, which is greater than the commonly accepted significance level of 0.05, indicates that there is no statistically significant difference in digital competency skills scores among the groups. Therefore, we fail to reject the null hypothesis, implying that the digital competency skills of secondary school teachers in Odisha do not significantly vary based on the categories analyzed in this study. This suggests that factors such as gender, teaching experience, marital status, and caste may not have a meaningful impact on the digital competency skills levels of these teachers, at least not at a statistically significant level.

**3.2.3 Comparative analysis of Digital competency skills in terms of Marital Status**

**Table 5. Marital status wise N, Mean, SD, df and t-value of digital competency skills**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Marital status | N | Mean | SD | Df | t-test | p-value | Remarks |
| Married | 236 | 69.56 | 13.231 | 457 | 3.88 | .000 |  |
| Unmarried | 223 | 75.58 | 10.707 |

**Fig.4. Marital status-wise N & Mean scores of digital competency skills**

The data compares digital competency skills among secondary school teachers based on marital status, with 236 married teachers and 223 unmarried teachers. The married group has a mean score of 69.56 with a standard deviation of 13.231, while the unmarried group has a higher mean score of 75.58 and a standard deviation of 10.707. A t-test was conducted to determine the significance of the difference between the two groups, yielding a t-value of 3.88 and a p-value of 0.000. Since the p-value is significantly less than the standard 0.05 threshold, the difference in digital competency skills between married and unmarried teachers is statistically significant.

The results indicate that unmarried teachers tend to score higher in digital competency skills compared to their married counterparts. The married group shows a higher level of variability in their scores, as reflected by the larger standard deviation, whereas the unmarried group exhibits less variation in their scores. These findings suggest that marital status might have an influence on digital competency skills, with unmarried teachers potentially being more adept at using digital tools. However, further research would be necessary to explore underlying factors, such as time constraints or access to technology, that might explain this difference.

**3.2.4 Comparative analysis of Digital competency skills in terms of Teaching Experience**

**Table 6. Teaching Experience wise N, Mean, SD, df and t-value of digital competency skills**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Teaching Experience | N | Mean | SD | Df | t-test | p-value | Remarks |
| High | 223 | 70.21 | 13.501 | 457 | 2.33 | .0313 |  |
| Low | 236 | 73.91 | 12.447 |

**Fig. 5. Teaching Experience wise N & Mean scores of digital competency skills**

The data compares digital competency skills between secondary school teachers with high and low teaching experience. The group with high teaching experience (223 teachers) has a mean score of 70.21 with a standard deviation of 13.501, while the group with low teaching experience (236 teachers) has a higher mean score of 73.91 and a standard deviation of 12.447. A t-test was conducted to evaluate the difference between the two groups, yielding a t-value of 2.33 and a p-value of 0.0313. The p-value is below the common threshold of 0.05, indicating that the difference in digital competency skills between the high and low experience groups is statistically significant.

This suggests that teachers with less teaching experience tend to have higher digital competency skills scores compared to their more experienced counterparts. The standard deviation values indicate that there is slightly more variation in digital competency skills among teachers with high teaching experience, while the low-experience group has somewhat less variability in their scores. These findings could imply that newer teachers, perhaps due to recent training or exposure to digital tools during their education, are more adept at using digital technology than their more experienced colleagues. Further investigation would be needed to explore the reasons behind this difference and any potential implications for professional development.

**4. DISCUSSION**

The present study examined digital competency skills and job satisfaction among secondary school teachers working in tribal areas of Western Odisha. This study also examines the differences of digital competency skills based on gender, training experience, locality and social category. The findings of the study were interpreted based on previous literature to understand the patterns and inconsistencies results. The present study found that male teachers significantly higher in digital competency skills in compared to female teachers of tribal arias. That indicate a gender gap in digital proficiency among secondary school teachers of tribal regions. Similarly, Cebi & Reisoglu (2020), also found gender-based differences in digital competency skills among pre-service teachers. Kaur & Sharma (2022) indicates that male teachers are demonstrate more digital engagement in science and technical disciplines. However, some recent studies contradict this trend. Iqbal et al. (2024) emphasized that digital competency skills is not only depend on gender it also influenced by access to training and motivational factors. These contradictory findings suggest that although gender-based inequalities persist in some contexts, they can be reduced through equitable professional development opportunities. A significant difference was also found in digital competency skills of teachers in terms of their teaching experiences. Less experience teacher demonstrated higher digital competency skills than the more experienced teachers. This finding supports the results of Suzer & Koc (2024), who found that younger or less experienced teachers are more technologically competent due to the recent training and early exposure. Furthermore, Swami (2024) found that younger teacher is more aware to digital resources, which indicates their higher competence levels. However, these results show that senior teacher may not be fully prepared to use digital tools. There is a strong need for regular digital skills training. This training should be provided no matter how many years a teacher has been working. The present study revealed that unmarried teachers had significantly higher digital competency skills compared to married teachers. While this variable is less commonly examined in existing literature, the result may be interpreted in light of time availability, flexibility, or fewer family responsibilities that allow unmarried teachers to engage more deeply with digital tools. This finding may also suggest the importance of providing time-bound, flexible training modules that accommodate the diverse life situations of teachers. Regarding social category, the study found no significant differences in digital competency skills among SC, ST, OBC, and General category teachers, despite minor variations in mean scores. These results challenge the traditional notion that socio-cultural background directly influences technological proficiency. Rather, they support the assertion by Kaur & Sharma (2022) that digital competency skills should be viewed through the lens of skill gaps, not demographic profiles. This aligns with the broader perspective that digital proficiency is shaped by institutional support, access to infrastructure, and individual motivation rather than caste or ethnicity. In relation to job satisfaction, the study found that higher digital competency skills are generally associated with greater levels of satisfaction among teachers. This is supported by Obadimeji and Oredein (2023), who established a positive relationship between digital confidence and job satisfaction among educators. Similarly, Camarillo (2024) noted that teachers with low digital skills are more likely to experience technostress and burnout, whereas those with adequate digital proficiency report higher job satisfaction and engagement. This reinforces the idea that professional satisfaction is increasingly linked to one’s ability to navigate digital teaching environments effectively.

Although the study focused on tribal regions, it did not find a statistically significant difference in digital competency skills based on locality (urban vs. rural). However, previous research by Babu and Suneela (2023) and Radhamani and Kalaivani (2023) has suggested that urban teachers generally enjoy better digital access and higher competence. The absence of such a distinction in the present study could point to successful digital outreach in tribal areas of Western Odisha or may reflect limitations in infrastructure that affect both urban and rural areas equally within the tribal context. It is also possible that the sample distribution in the study was not sharply differentiated in terms of rural and urban characteristics, given the remote nature of the region. The interaction effects of gender, locality, and teaching experience were found to be statistically non-significant in this study, implying that no single combination of these factors exerted a compounding influence on digital competency skills or job satisfaction. This suggests that while individual variables like gender and teaching experience play a role, their combined effect is not substantial enough to influence outcomes. These results are aligned with the arguments of Tomczyk (2024) and Khalil and Alsenaidi (2024), who advocate for policies that focus on institutional and infrastructural changes rather than solely demographic characteristics. Overall, the findings of this study indicate that demographic variables such as gender and teaching experience do influence digital competency skills to a certain extent, but their impact can be mitigated through well-structured, inclusive, and need-based professional development. Finally, educational policy frameworks in tribal regions must emphasize equitable access to digital tools, regular training, and supportive environments to empower teachers to thrive in a digitally evolving educational landscape.

**5. CONCLUSION**

The findings of the study reveal notable trends in the digital competency skills levels of teachers based on key demographic factors. Male teachers demonstrated higher digital competency than their female counterparts, indicating a gender-based disparity. Interestingly, teachers with less teaching experience significantly outperformed those with more experience, suggesting that newer entrants may be more attuned to digital tools and technologies. Similarly, unmarried teachers displayed higher digital competency skills scores than married teachers, potentially reflecting fewer familial responsibilities or greater flexibility to engage with digital learning. Regarding social categories, while ST teachers recorded the highest average digital competency skills score, followed by OBC, SC, and General category teachers, the differences among these groups were not statistically significant. This implies that caste-based background did not have a decisive impact on digital skills in this context. Overall, the study highlights that digital competency skills among secondary school teachers in tribal regions of Odisha is influenced more by gender, experience, and marital status than by social category, pointing to the need for targeted professional development that accounts for these demographic nuances to bridge existing gaps.

**Disclaimer (Artificial Intelligence)**

The author(s) hereby declare that no generative AI technologies such as Large Language Models (e.g., ChatGPT, Copilot, etc.) or text-to-image generators were used during the writing or editing of this manuscript. All content is the original work of the author(s) and has been developed without the assistance of any AI tools.

**REFERENCES**

Babu, P., & Suneela, M. E. (2023). Empowering educators in the digital age: A comprehensive study of secondary school teachers’ digital competence. *International Journal of Novel Research and Development, 8*(11), 439-443.

Benali, M., Kaddouri, M., & Azzimani, T. (2018). Digital competence of Moroccan teachers of English. *International Journal of Education and Development Using Information and Communication Technology, 14*(2), 99-120.

Bertrand, M. G., & Namukasa, I. K. (2020). STEAM education: student learning and transferable skills. *Journal of Research in Innovative Teaching & Learning*, *13*(1), 43-56.

Brolpito, A. (2018). Digital Skills and Competence, and Digital and Online Learning. *European Training Foundation*.

Camarillo, J. R. (2024). Digital competence in relation to the technology integration og public elementary school teachers in Davao Del Sur division. *International Journal of Research Publication and Reviews, 5*(6), 1102-1108. <https://doi.org/10.55248/gengpi.5.0624.1435>

Çebi, A. & Reisoğlu, I. (2020). Digital Competence: A Study from the Perspective of Pre-service Teachers in Turkey*. Journal of New Approaches in Educational Research, 9*(2), 294-308. <https://doi.org/10.7821/naer.2020.7.583>

Ergul, D. Y. & Tasar, M. F. (2023). Development and validation of the teacher’s digital competency scale (TDiCoS). *Journal of Lerning & Teaching in Digital Age,* 8(1), 148-160

Iqbal, I., Hussain, I., Tahir, M. S. (2024). Teachers’ digital competence and its relationship with teachers’ effectiveness at higher education level in Punjab. *Journal of Education and Social Studies, 5*(2), 271-285.

Kaur, M., & Sharma, M. (2022). Digital competence among research scholars in relation to their academic achievement and selected demographic variables. *Indian Journal of Research, 11*(10), 71-74. <https://doi.org/10.36106/paripex>

Khalil, H., & Alsenaidi, S. (2024). Teachers’ digital competencies for effective AI integration in higher education in Oman. *Journal of Education and e-Learning Research, 11*(4), 698-707. <https://doi.org/10.20448/jeelr.v11i4.6097>

Malik, R. S. (2018). Educational challenges in 21st century and sustainable development. *Journal of Sustainable Development Education and Research*, *2*(1), 9-20.

Mustafa, B., & Lleshi, S. (2024). The impact of lifelong learning and investments in employee development on employee productivity and performance. *Multidisciplinary Reviews*, *7*(8), <https://doi.org/2024175-2024175>.

Obadimeji, C. C., & Oredein, A. O. (2023). Postgraduate college staff digital competence as a predictor of lecturer’s job satisfaction for sustainable education. *Gen-Multidisciplinary Journal of Sustainable Development, 1*(1), 1-14.

Osuji, C. U. & Arannilewa, A.O. (2022). Teachers’ Digital Competence and Utilization of E-learning Platforms in Private Secondary Schools in Ado Local Government Area of Ekiti State. *International Journal of Advanced Research and Learning, 1*(3), 12-23.

Radhamani, K., & Kalaivani, D. (2023). Digital competence among secondary teachers. *International Journal of Science and Research, 12*(6), 1004-1006.

Sakallı, Ö., Tlili, A., Altınay, F., Karaatmaca, C., Altınay, Z., & Dağlı, G. (2021). The role of tolerance education in diversity management: A cultural historical activity theory perspective. *Sage Open*, *11*(4), <https://doi.org/21582440211060831>

Serdyukov, P. (2017). Innovation in education: what works, what doesn’t, and what to do about it?. *Journal of research in innovative teaching & learning*, *10*(1), 4-33.

Spante, M., Hashemi, S. S., Lundin, M., & Algers, A. (2018). Digital competence and digital literacy in higher education research: Systematic review of concept use. *Cogent education*, *5*(1), 1519143.

Suzer, E., & Koc, M. (2024). Teachers’ digital competency level according to various variables: A study based on the European DigCompEdu framework in a large Turkish city. *Educ Inf Technol, 29*, 22057–22083. <https://doi.org/10.1007/s10639-024-12711-1>

Swami, M. (2024). A study on assessing the digital competency profile of teachers in Odisha. *International Journal of Science and Research, 13*(7), 5-9. <https://dx.doi.org/10.21275/MR24527205609>

Tomczyk, L. (2024). Digital transformation and digital competences of urban and rural polish youths. *Politics and Governance, 12*. 1-18. <https://doi.org/10.17645/pag.7381>

Vasoya, V. G. (2023). *Unleashing Your Potential:: A Journey of Self-Discovery and Personal Growth*. Dr. Vasoya's Healing Homoeopathy.

Volti, R., & Croissant, J. (2024). *Society and technological change*. Waveland Press.

Yazon, A. D., Ang-Manaig, K., Buama, C. A. C., & Tesoro, J. F. B. (2019). Digital literacy, digital competence and research productivity of educators. *Universal Journal of Educational Research, 7*(8), 1734-1743. <https://doi.org/10.13189/ujer.2019.070812>

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*