



Relationship between ICT Literacy and Self-efficacy among Secondary School Teachers: The Case of Mayurbhanj District, Odisha

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Abstract: *This study investigates the relationship between ICT literacy and self-efficacy among secondary school teachers. As technology becomes increasingly integrated into educational environments, understanding how digital competence influences teachers' confidence is essential. A quantitative correlational research design was employed, involving a sample of 60 secondary school teachers from Mayurbhanj district, Odisha. Data were collected using standardized instruments measuring ICT literacy and self-efficacy. Statistical analysis revealed a significant positive correlation between ICT literacy and self-efficacy ($r = .598, p < .001$), indicating that teachers with higher levels of ICT proficiency tend to exhibit stronger beliefs in their teaching abilities. The findings led to the rejection of two null hypotheses, confirming the importance of digital skills in enhancing teachers' professional confidence. Although the third hypothesis regarding differences in self-efficacy between high and low ICT literacy groups was not directly tested through a comparative analysis, the correlation suggests a likely disparity. These results underscore the need for integrating ICT training into teacher education and professional development programs. Enhancing digital competence among teachers not only supports effective technology integration but also strengthens their overall self-efficacy, contributing to improved teaching performance and student outcomes.*

Keywords: *ICT literacy, use of ICT, self-efficacy*

1. Introduction

The need for information and communication technology (ICT) in the 21st century can be felt almost in every human action and thought. The teaching-learning process has also been experiencing the ubiquitous presence of ICT. The pandemic arrival of COVID-19 across the globe made this need more acute, making it use a compulsion pushing behind all earlier hesitations. Studies have shown the effective use of ICT demands few specific skills, attitudes,

the device where users often face difficulties. The current study is an investigation into the relationship between ICT literacy and Self-efficacy level among secondary school teachers.

The integration of Information and Communication Technology (ICT) in Indian secondary education is hindered by teachers' varying levels of ICT literacy and self-efficacy, leading to ineffective teaching practices and suboptimal student learning outcomes. Despite the Indian government's initiatives to promote ICT in education, many teachers struggle to effectively utilize technology in teaching learning environments due to limited ICT literacy and self-efficacy. This study aims to explore the relationship between ICT literacy and teacher self-efficacy in Indian secondary education, examining how these factors intersect and impact teaching practices and student learning outcomes, thereby identifying areas for teacher training and support to enhance ICT integration in Indian secondary schools.

The purpose of this quantitative correlational study was to determine the effects of the human self in the context of ICT use. Precisely, the effects of teachers' self-efficacy and self-concept on their perceived ease of ICT use, to enrich their teaching potential and ensure that children are learning (NEP, 2020). Robert Sternberg wrote that the major factor in whether people achieve expertise is not some fixed prior ability but purposeful engagement (Sternberg, 1990). This notion has further been echoed in Carol D. Lewis' idea of 'growth mindset' (Dweck, 2006). She wrote quoting Alfred Binet that it is not always the people who start out smartest end up the smartest. The implication is that the purposeful engagement in a work is a touchstone for excellence.

The Indian government has been spending a lot to inspire the schools to adopt ICT enabled learning environments in schools in the past two decades. But the improvement was not evident as the latest studies found due to this lack of purposeful engagement apparent in all stakeholders. The arrival of COVID-19 made the situation more dilapidated, popping up with its skeletal appearance. Despite their commitment to teaching students with the latest pedagogy using the latest technologies, teachers are not equipped to integrate ICTs to their fullest potential in the classrooms. Even institutions that are enthusiastic to adopt new technologies may be critically embarrassed and constrained by the lack of necessary human resources or the financial wherewithal to realize their ideas (Kundu, 2018). There have been studies that suggest specific approaches, and many studies have suggested further research regarding specific strategies (Zee & Koomen, 2016); however, little research has sought to quantify what

approaches influence teacher efficacy? Unless researchers can identify what works, school systems will continue to waste funds to fix the problem. In this context Rogers (2000) said funding that is inappropriately allocated, used only for buying hardware and not for personnel or training, is wasted, besides, such waste contributes to negative attitudes toward technology, which ultimately is represented as the first major barrier to technology adoption.

The current study implies a promise to provide evidence for teachers as to what the formula may be for success with the implementation of ICT within the classroom. It would provide a guideline for a sound counselling program to boost the usability of ICT among teachers and thereby accost their efficiency. Students' lives would also benefit greatly from this study, as they might have an opportunity to learn from a cadre of teachers who are internally prepared to use ICTs in their teachings and better equipped to face any challenges in this regard. The vital cognitive states teachers divulged in course of this study and reported with genuine authenticity will help policymakers to realize the current state of teachers' minds. How deep was the psychological sabotage? How far their inner self was prepared to adopt ICT? What did they need? How to cater to these in the best possible means?

Objectives of the present study are:

1. To explore the level of ICT literacy among secondary school teachers
2. To explore the level of self-efficacy among secondary school teachers
3. To study the relationship between ICT literacy and teacher's self-efficacy

2. Literature Review

Singh & Singh (2023) conducted the study on "Usage of ICT in relation to self-efficacy among secondary school teachers". The data collected from 76 private teachers and 45 teachers teaching in government secondary schools of Varanasi. Two sets of questionnaires consisting of usage of ICT and self-efficacy based on the Five-point Likert Scale were used to collect data from the secondary school teachers in Varanasi. Percentage analysis was used to explore the levels of self-efficacy and ICT usage among secondary school teachers. Product-moment correlation and t-test were employed to find out the relationship and significant differences between ICT usage and self-efficacy between private and government secondary school teachers of Varanasi city. The findings of the study revealed that the majority of secondary school teachers came under the category of average level of ICT usage and Self-Efficacy. The

study also shows that there was a significant relationship between high and average levels of ICT usage and the self-efficacy of secondary school teachers. The study also revealed that there was a significant difference in the ICT usage and self-efficacy of government and private secondary school teachers.

Baytar, et al. (2023) researched on “Teachers’ sense of competence in terms of ICT use: the case of secondary school teachers”. The objective of the study is to assess the sense of competence level in the use of ICT. This study highlighted significant relationships between the sense of competence in terms of ICT use and six independent variables: continuous training, learning readiness, gender, age, teaching experience, and school subject. Quantitative method adopted for this study. As the sample 260 secondary school teachers were taken from the Directorate of Education in Rhamna, Morocco. The finding of the study is that the competence level regarding the use of ICT is very low.

Gordon, et al. (2023) conducted the study on “Teacher self-efficacy and reform: a systematic literature review”. This study aims to explore the interaction between curriculum and assessment reform and TSE. Twenty-nine empirical research studies are analysed to find factors that impact TSE during change and the support mechanisms necessary to maintain high TSE. This research used the Systematic Quantitative Literature Review method coupled with Social Cognitive Theory and Sources of Self-efficacy. The studies reported that environmental determinants lowered TSE during reform and it was found that to support high TSE professional learning was necessary.

Paetsch, et al. (2023) conducted the study on “Changes in early career teachers’ technology use for teaching: The roles of teacher self-efficacy, ICT literacy, and experience during COVID-19 school closure”. This study examines how early-career teachers’ experience and perceived support during the pandemic affected their technology integration self-efficacy and their use of information and communication technology (ICT) after school closure. Data were drawn from the National Educational Panel Study (NEPS): Starting Cohort First-Year Students, which is an add-on study of the first-year student cohort of NEPS. Total of 965 early career teachers taken as teaching. The results reveal that teachers’ positive teaching experiences were associated with their technology integration self-efficacy and their self-reported changes in technology use after the school closure. The results show effects of ICT literacy and general teacher self-efficacy on technology integration self-efficacy. ICT literacy, teacher self-efficacy,

and positive experience had indirect effects, whereas support and technology integration self-efficacy had direct effects on changes in teachers' ICT use for teaching.

Afolabi, et al. (2022) conducted the study on “information literacy skills, teachers' self-efficacy and use of information resources by secondary school teachers in selected secondary schools in Ijebu ode local government, Ogun state”. The objectives of the study are to examine the information literacy skills, self-efficacy and use of information resources by secondary school teachers in selected secondary schools in Ijebu ode local government, Ogun state. This research was studied under a qualitative research approach. Descriptive survey research design was adopted for this study. Total enumeration technique was used in selecting the respondents for the research. A validated, self-designed and close-ended questionnaire was used as the instrument in gathering data from the respondents. Descriptive statistics (frequency, percentage, mean) and Pearson Product Moment Correlation (PPMC) were used to analyse the data gathered through questionnaires. The data collected from teachers of secondary schools in Ijebu ode local government, Ogun state. The findings of this study were concluded that the major information literacy skills possessed by teachers are using electronic information resources, evaluating WWW sources, using different kinds of print source such as books and periodicals, selecting information most appropriate to the information needed, and defining the information that they need.

Kumbaya, et al. (2022) conducted the research on “Teachers' perspectives on using information and communication technology in the secondary school practice: a case study”. Objective of this study is to explore teachers' perspectives on using ICT in secondary school education and the relationship between teachers' age, education, work experience and the aptitude for using ICT in teaching practice. Mixed method was adopted for this study. Sample was collected from 104 teachers from 40 secondary schools in Aktobe city, the Republic of Kazakhstan. The study's results depict that the technology used in the educational process affects the growth of teachers' professional competence and contributes to high motivation of students, valuable results in teaching, and a substantial improvement in the quality of education.

Olorunsola & Ogwueleka (2021) conducted the study on “Assessment of Teachers' Perception on Modern Technology (ICT) and Communication Efficiency: A Case Study”. Objective of the study is to examine the perception of secondary school teachers on the impact

of ICT deployment for communication efficiency in the teaching and learning process. Quantitative method was adopted for this study. Secondary school teachers in Kaduna State, Northern Nigeria were taken as the sample of the study. The results from this study show that ICT media such as the computer and the Internet, have a significant impact on communication efficiency in the teaching and learning process by facilitating clarity, ease, speed, security and prompt feedback in the communication process.

Kundu, et al. (2020) studied on “An empirical study on the correlation between teacher efficacy and ICT infrastructure”. The objective of the study was to investigate the correlation between teachers’ ICT self-efficacy and perceived ICT infrastructure in school. The study employed a descriptive survey method within ex-post facto research design by taking 100 purposely selected Indian government run secondary schools and 400 teachers as participants. The data were analysed descriptively and inferentially. A correlation analysis was conducted. Findings of this study revealed that the participant teachers’ overall ICT self-efficacy was moderately low and their perception of ICT infrastructure in their respective schools was also far below the expected level. The investigation finally found a moderately high and positive correlation between teachers’ ICT self-efficacy and their overall perception of ICT infrastructure.

Waiganjo & Paxula (2020) stated on the topic “Teachers' Perceptions and Use of Information and Communication Technology in Teaching and Learning: Kadjimi Circuit, Kavango West, Namibia”. Objectives of the study are to describe teachers’ perceptions on the use of technology in the process of teaching and learning, teachers who are teaching at the secondary level in rural area schools of Namibia. The researcher used a qualitative method for this study. The sample was taken from 24 secondary school teachers of Kadiimi Circuit, Kavango West. The study stipulated that the majority of the teachers used computers in their teaching, because of its multi-functioning aspects. Some challenges are seen such as lack of skills, Information Communication Technology (ICT) tools, cell phone usage. The study shows that most teachers have the right attitudes and positive perceptions on the meaningful use of ICT in teaching and learning, therefore they must be encouraged in using ICT to embrace the Namibian education sector.

Pima (2019) conducted the research on “Factors that motivate teachers to use ICT in teaching: A case of Kaliua District secondary schools in Tanzania”. This study investigates the factors

that motivate teachers to use Information Communication Technologies (ICT) in teaching in remotely located secondary schools in Tanzania. Here the researcher adopted a Quantitative method to complete the study. As a sample of the study 111 teachers were taken from 14 secondary schools of Kaliua district. The finding of the study is that the teachers of remotely located schools are ready to use ICT in teaching if there is availability of smartphone, internet and needed material for using ICT.

Coban & Atasoy (2019) researched on “An Examination of Relationship between Teachers' Self-Efficacy Perception on ICT and Their Attitude towards ICT Usage in the Classroom”. The aim of this study is to examine the relationship between teachers' self-efficacy perception on ICT and their attitude to ICT usage in the classroom. For this purpose, two scales were used: ‘Teachers' Self-efficacy Perception on ICT Scale’ and the ‘Teachers' Attitude towards ICT Usage Scale’. A descriptive research method was used to collect a sample with a total of 42,307 teachers took part in this study. Mean, standard deviation, Pearson correlation and linear regression analyses were used to analyse the collected data. The result shows that a significant relationship was found between teachers' self-efficacy perception on ICT and their attitude towards ICT usage in their classrooms.

Omosekejimi, et al. (2018) conducted research on the topic “ICT and digital literacy skills: A mechanism for efficient teaching in Nigerian colleges of education”. This study is based on examining if the ICT and digital literacy skills could serve as facilitators and if it could improve the teaching learning process. Through quantitative methods the research has been done. 1500 lecturers of colleges of education in South West Nigeria were taken as the sample of the study. The result is that most of the lecturers in colleges of education in Nigeria are not proficient in the use of PowerPoint, excel and spreadsheet and cannot apply computers to solve real life academic problems.

Hatlevik & Hatlevik (2018) stated on topic “Examining the relationship between teachers' ICT self-efficacy for educational purposes, collegial collaboration, lack of facilitation and the use of ICT in teaching practice”. This study addresses teachers' ICT self-efficacy for educational purposes, and examines the assumed antecedents of teachers' self-efficacy. This study has a cross-sectional, correlational design, and is a secondary analysis of existing data under quantitative research approach, namely the Norwegian ICILS 2013 consisting of responses from 1158 secondary school teachers. The results indicate that teachers' self-efficacy

for using ICT in their teaching practice is associated with their use of ICT in teaching and their general ICT self-efficacy. In addition, the results show that collegial collaboration among teachers has a positive association with the use of ICT in their teaching practice. One interpretation of these findings is that general ICT self-efficacy is necessary for developing ICT self-efficacy for educational purposes and being able to use ICT in education.

Kumari & D'Souza (2016) conducted the study on “Secondary school teachers' digital literacy and use of ICT in teaching and learning”. The major objective is to study the level of digital literacy among teachers and the use of ICT in teaching learning process. For this study a qualitative research method was adopted. Mangaluru Taluk school was taken as the study sample. The finding of the research is that the level of digital literacy among teachers and the use of ICT in teaching and learning is average.

Buabeng-Andoh (2012) conducted the research on the topic “An exploration of teachers' skills, perceptions and practices of ICT in teaching and learning in the Ghanaian second-cycle schools”. This study questions teachers' perceptions of the application of ICT in teaching, Teachers perceived skills in ICT and the extent of teachers' integration of ICT into teaching and learning process. Here the researcher adopted a mixed method for collecting data. 231 school teachers of Second-Cycle schools participated as the sample of the study. The finding of the study is that the teachers' knowledge in basic ICT applications as well as integrating ICT into teaching and learning process was low.

Govender & Govender (2009) conducted the research on “The relationship between information and communications technology (ICT) integration and teachers' self-efficacy beliefs about ICT”. *Education as Change*, 13(1), 153-165. The study aims to explore a possible relationship between teachers' self-efficacy beliefs pertaining to their own level of competence and their attitudes towards technology adoption. Questionnaires were used to determine teachers' perceptions of their competence and factors that relate to their attitudes. Their responses were analysed using a statistical package (SPSS) and social cognitive theory was used as a framework to explain human learning in terms of motivation, behavioural and environmental factors. The data collected from the target population in this study was secondary school educators in the Ethekewini Region of KZN. A random sample of 191 schools was used. The findings of the study concluded teachers' perceptions of the relative advantage and compatibility of ICT were positively correlated to educators' attitudes towards computers.

This could be used as a springboard to increase their self-efficacy about ICT and hence adopt ICT in teaching and learning.

The effective integration of Information and Communication Technology (ICT) in secondary education is crucial for enhancing teaching and learning. The success of ICT depends largely on teachers' ICT literacy and self-efficacy. While research has explored these constructs separately, there is a need to investigate their relationship and how they impact teaching practices.

This study aims to explore the relationship between ICT literacy and teacher self-efficacy, examining the level of ICT literacy among secondary school teachers, investigating the level of teacher self-efficacy among secondary school teachers, analysing the relationship between ICT literacy and teacher self-efficacy, comparing the ICT literacy and self-efficacy of teachers in different subject areas and experience levels.

This study will provide insights into the intersection of ICT literacy and teacher self-efficacy. The findings will inform teacher education programs, professional development initiatives, and education policy, ultimately enhancing the effective integration of ICT in secondary education.

3. Methodology

The present study sought to investigate the relationship between ICT literacy and self-efficacy of Secondary school teachers in Mayurbhanj district, Odisha. Keeping this view in mind the objective of the study will be to use a descriptive survey method. Percentage analysis will be used to explore the levels of ICT literacy & teachers' self-efficacy among secondary school teachers. Further, the correlation research method will be used to get the result of the survey. For the present study the investigator has adopted correlational study design.

3.1 Population of the Study

The population of the present study comprises all secondary school teachers of Mayurbhanj District, Odisha, India.

3.2 Sample and Sample Techniques

For this present study total 60 secondary teachers have participated as a sample to complete the objectives of this study. Basically, total of 60 teachers are working in the government secondary schools of Mayurbhanj district. Here the investigator used Purposive Sampling to fulfil the requirements of the study and used for data collection.

3.3 Research Tools

For this study, online survey based google forms will be used to collect data from secondary school teachers. The survey questions will consist of 2 parts. First part will include questions regarding ICT and the second part will include questions regarding teachers' self-efficacy.

Following tools were developed and used by the investigator -

- A. Self-made ICT questionnaire tool for objective 1
- B. Standardized tool for objectives 2 and 3

The investigator used 25 questions regarding ICT literacy for the fulfilment of objective 1. Each question carries 1 mark. And for the fulfilment of objectives 2 and 3, one standardized tool used by the investigator.

3.4 Procedure for Data Collection

ICT literacy Test: The investigator used 25 questions regarding ICT literacy for the fulfilment of objective 1. Each question carries 1 mark. The questionnaire based on MCQ pattern.

Self-efficacy Test: For the fulfilment of objectives 2 and 3, one standardized tool used by the investigator. This questionnaire is designed as Likert Scale help to gain a better understanding of the confidence in using ICT for school activities of secondary school teachers. Each of the statements carries as per the Response Format: (Nothing =1), (Very Little =2), (Some Influence =3), (Quite A Bit =4), (A Great Deal =5).

3.5 Techniques of Data Analysis

The nature of the study is quantitative. For this study the investigator used a descriptive survey method to conduct the research. The study is aimed to investigate the relationship between ICT literacy and self-efficacy of secondary school teachers.

For the analysis of objective 1 the investigator used 25 questions regarding ICT literacy and each question carries 1 mark. The questionnaire pattern of this study is based on MCQ. For the analysis of objective 2 one standardized tool used by the investigator. This questionnaire is designed as Likert Scale help to gain a better understanding of the confidence in using ICT for school activities of secondary school teachers. Each of the statements carries as per the Response Format: (Nothing =1), (Very Little =2), (Some Influence =3), (Quite A Bit =4), (A Great Deal =5). And for objective 3, the investigator used Pearson's correlation method to analyse the relationship between ICT literacy and self-efficacy level of secondary school teachers.

4. Results and Discussion

4.1 Hypotheses of the study

H₀1- There is no significant relationship between ICT literacy & self-efficacy of secondary level school teachers.

H₀2- There is no significant relationship between higher ICT literacy knowledge and higher self-efficacy in secondary school teachers.

H₀3- There is no significant difference in the self-efficacy of secondary school teachers with high and low ICT literacy.

4.2 Level of ICT literacy and Self-efficacy level among secondary school teachers

Table 1

	Mean	SD	N
ict_li	63.55	19.626	60
Self_ef	13.68	5.774	60

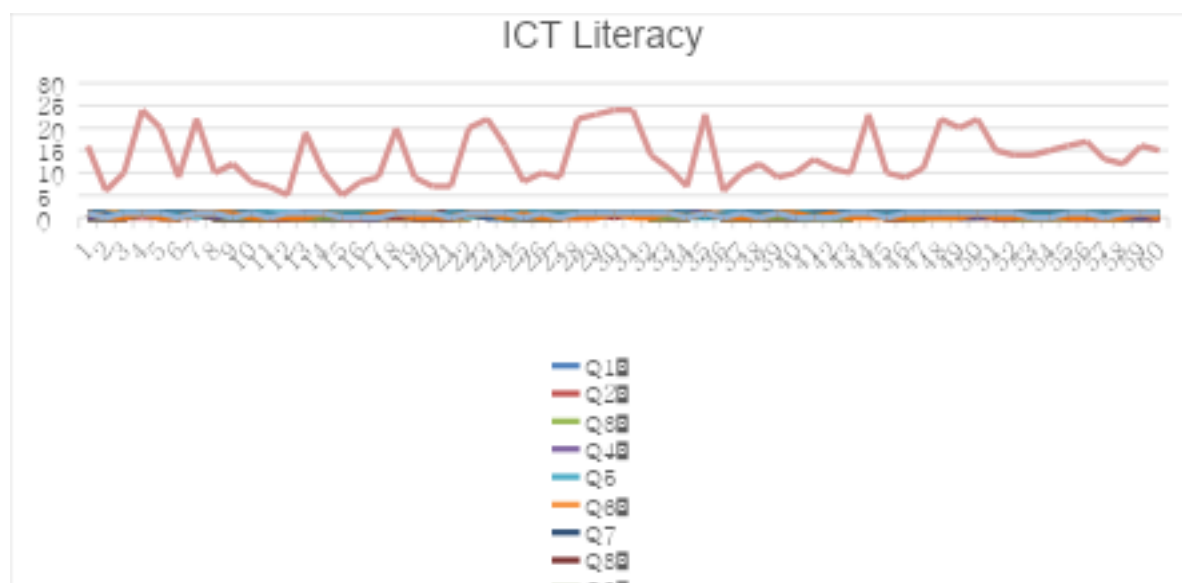


Figure 1

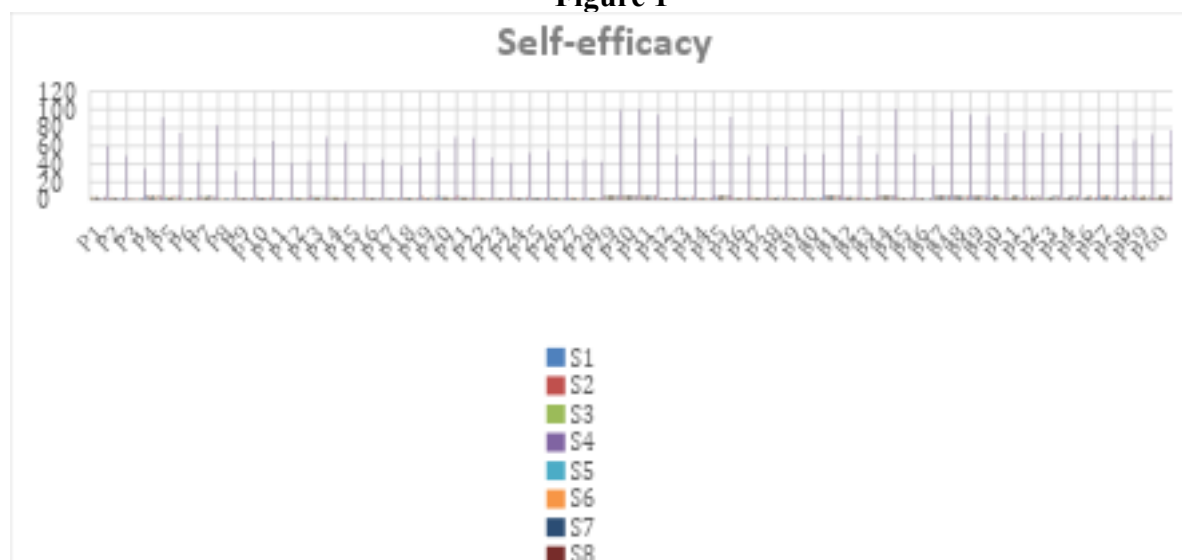


Figure 2

The above table shows the level of ICT literacy (ict_li) and the level of self-efficacy (self_ef) among secondary school teachers of Mayurbhanj district, Odisha.

The mean score of self-efficacy level among secondary school teachers is 63.55 and ICT literacy mean score is 13.68. Similarly, the standard deviation (SD) of self-efficacy and ICT literacy level among secondary school teachers are 19.626 and 5.774 respectively.

4.3 Relationship between ICT literacy and Self-efficacy level among secondary school teachers

To find out the relationship scores of ICT literacy and self-efficacy level of secondary school teachers, Pearson’s product moment correlation was employed by the researcher which is given the following table.

Table 2: Correlation

		self_ef	Ict_li
self_ef	Pearson Correlation	1	.598
	Sig. (2 tailed)		<.001
	Sum of Squares and Cross-products	22724.850	3997.450
	Covariance	385.167	67.752
	N	60	60
Ict_li	Pearson Correlation	.598	1
	Sig. (2 tailed)	<.001	
	Sum of Squares and Cross-products	3997.450	1966.983
	Covariance	67.753	33.339
	N	60	60

This table displays the Pearson correlation results between two variables: self_ef (likely "self-efficacy") and ict_li (likely "ICT literacy"). The correlation between self_ef and ict_li is 0.598, which indicates a moderate to strong positive relationship. This means as self-efficacy increases, ICT literacy tends to increase as well and if self-efficacy decreases, ICT literacy tends to decrease as well. Basically, both variables are dependent on vice versa. The Statistical Significance is Sig. (2-tailed) value is < .001, which is far below the common significance level of 0.01. This means the correlation is statistically significant, so the observed relationship is unlikely to be due to chance. The correlation is based on data from 60 participants. It's sample size N= 60. Covariance and sum of squares are intermediate values used in calculating the correlation. There is a significant positive correlation between self-efficacy and ICT literacy ($r = 0.598, p < .001$), suggesting that individuals with higher self-efficacy tend to also have higher ICT literacy.

The Pearson correlation coefficient between ICT literacy and self-efficacy was $r = .598$ with a significance value of $p < .001$, indicating a significant positive relationship. Therefore, the null hypothesis is rejected, and it is concluded that ICT literacy is significantly related to self-efficacy among secondary school teachers.

5. Conclusion

5.1 Major Findings

- i) The Pearson correlation coefficient between ICT literacy and self-efficacy was indicating a significant positive relationship. And it is concluded that ICT literacy is significantly related to self-efficacy among secondary school teachers.

- ii) The statistically significant positive correlation confirms that teachers with higher ICT literacy tend to have higher self-efficacy.
- iii) Here the findings infer that higher ICT literacy is associated with higher self-efficacy. The hypothesis stating that there is a significant positive relationship between ICT literacy and self-efficacy.

5.2 Discussion

The study demonstrates a significant positive relationship between ICT literacy and self-efficacy among secondary school teachers ($r = .598$, $p < .001$) of Mayurbhanj district, Odisha. This suggests that teachers who possess higher levels of ICT literacy tend to exhibit greater confidence in their professional capabilities. The result supports the rejection of the null hypotheses H_{01} and H_{02} , indicating that ICT literacy plays a meaningful role in shaping teachers' self-efficacy.

The relationship between ICT literacy and self-efficacy of secondary level teachers of Mayurbhanj district states with the Pearson correlation coefficient between ICT literacy and self-efficacy is $r = .598$ with a significance value of $p < .001$, indicating a significant positive relationship. Therefore, the null hypothesis is rejected, and it is concluded that ICT literacy is significantly related to self-efficacy among secondary school teachers.

The relationship between higher ICT literacy knowledge and higher self-efficacy in secondary school teachers shows the statistically significant positive correlation ($r = .598$, $p < .001$) confirms that teachers with higher ICT literacy tend to have higher self-efficacy. Hence, this hypothesis is also rejected.

The higher ICT literacy is associated with higher self-efficacy. The hypothesis stating that there is a significant positive relationship between ICT literacy and self-efficacy. The Pearson correlation coefficient ($r = .598$, $p < .001$) indicates a moderate to strong positive correlation that is statistically significant. Additionally, the 95% confidence interval (.406 to .740) reinforces the reliability of this relationship. Therefore, it can be concluded that increased levels of ICT literacy are associated with higher levels of self-efficacy among the participants.

5.3 Delimitation of the Study

- i) The study is limited to only secondary school teachers.
- ii) This study only provides limited data on secondary schools of Rairangpur town.
- iii) This study will be conducted with limited methodology under a quantitative research approach.

5.4 Conclusion

These findings align with existing literature emphasizing that digital competence enhances teachers' instructional confidence and adaptability in technology-integrated classrooms. Overall, the results highlight the importance of incorporating ICT training in teacher development programs to enhance both digital proficiency and professional self-belief. This study explored the relationship between ICT literacy and self-efficacy among secondary school teachers and found a statistically significant positive correlation between the two variables. The results indicate that teachers with higher ICT literacy are more likely to demonstrate greater self-efficacy in their professional roles. These findings underscore the importance of enhancing ICT skills as a means to support teacher confidence and effectiveness. Integrating ICT training into teacher education and ongoing professional development is therefore essential to meet the demands of modern teaching environments and to foster empowered, tech-competent educators.

5.5 Recommendations

- i) The recommendation of the counselling sessions for the teachers to enhance their self-beliefs and overall mapping of themselves in the light of their capacity building is an empirically proven step that is anticipated to improve the current state of ICT use in the school pedagogies in a country like India where the digital divide is too deep.
- ii) Considering the proven importance of teachers' self-efficacy and ICT literacy on their perceived ease of ICT use and huge differences among teachers in respect of their perceived ease with the ICT in India, the researcher provides few pertinent recommendations to prepare them internally by strengthening their subjective self-beliefs and self-confidences. The focus of these recommendations was to prepare an effective counselling model to incorporate self-belief and self-esteem among teachers wherefrom they could overcome their immediate challenges to a substantial degree especially during a time when the establishment of a sound ICT integrated online teaching-learning infrastructure is not discernible.

5.6 Limitations of the Study

- 1 The study relies on self-reported questionnaires, so there is a risk of social desirability bias, where teachers might overestimate their ICT skills or self-efficacy.
- 2 A limited or homogenous sample (in terms of region, gender, or teaching experience) can affect the generalizability of the findings.
- 3 Teachers' perception of their self-efficacy may vary widely based on their personality, making it difficult to standardize.

- 4 The fast-paced evolution of technology can make the study quickly outdated, as new tools and skills may emerge.
- 5 Factors such as school infrastructure, administrative support, and access to ICT tools can vary significantly, impacting teachers' ICT literacy and self-efficacy.
- 6 If the tools used to measure ICT literacy and self-efficacy are not properly validated, the results may not be accurate.
- 7 Teachers who are not comfortable with technology may avoid participation, leading to sampling bias.
- 8 Cultural perceptions of technology and teaching may influence both ICT literacy and self-efficacy differently in different regions.

5.7 Suggestions for Further Studies

Despite having these limitations owing to limited time and resources, the study left before the concerned intelligentsia and the research community with a light of hope and aspiration to strengthen teachers perception of ICT use through a structured counselling program.

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