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A Study of the 21st Century Skills of Primary Teachers in Tribal District of Chhattishgarh .

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Abstract: The 21st century is known for its revolutionary changes in the field of ancient knowledge systems. The skills of the 21st century, such as critical thinking, creativity, communication, collaboration, information, media, and technology literacy, have changed the perceptions of the teachers. The teaching competencies of the teachers, such as understanding the curriculum, classroom management, lesson planning, teaching approaches, methods, and evaluation patterns, have also become innovative. The study investigated the current perception level about the 21st century among primary teachers in the tribal district Gourella-Pendra-Marwahi, Chhattisgarh, which needs special attention and support to improve its socio-economic and educational status. In this study an inferential approach that is quantitative was used involving the survey method. A 5-point rating scale was appointed for collecting data from 60 government primary schools. 120 primary teachers from three blocks were selected for this study. As statistics mean, standard deviation, correlation, t-test, and ANOVA were used. The finding of this study was seen as significantly paired and somewhere differed in various aspects of 21st-century skills. Hypotheses were somewhere accepted and somewhere rejected. The finding of the coefficient of correlation between creativity and critical thinking of HMs and ATs was cumulative +0.43 and +0.36, and similarly, the coefficient of correlation between communication and collaboration of HMs and ATs was cumulative +0.23 and +0.38, which was low to moderate. The standard deviation of IMTS was found to be high in the Gaurella and Marwahi regions because of geographical conditions. The correlation between IMTF and '4Cs' were also low and moderate but the perceptions between IMTF And creativity was +.55 of HMs greater than ATs. Thus, by this study, we sent suggestions to higher authority of education to facilitate and provide training on continuous professional development to strengthen 21st-century skills among primary school teachers and develop the infrastructure, especially internet, smart classroom, AI based learning and creative content learning in remote and rural areas in the tribal district of GPM, Chhattishgarh.

Keywords: 21st century skills, primary teachers, tribal district.

- 1. Introduction:** The age of the 21st century is the age of science and technology. Science and technology have changed the education system all over the world. The aim of today's education system is not only to improve the knowledge of students but also to equip them with various skills. If we discuss 21st-century skills, these are critical thinking, creativity, communication, collaboration, and digital skills (**Partnership for 21st Century Skills, 2009**). The inclusion of these skills enhances the output of teachers as well as the students. These 21st-century skills prepare the students to be more capable, complex, and interconnected (**Voogt, 2013**).

The National Education Policy of India has highlighted the vital role of 21st-century skills in the field of education (**NEP-2020**). The importance of digital and online education and its utilization impacted the teaching competencies of the teachers in developing the effective curriculum and classroom teaching (**NEP 2020 Draft, Part II**). The teachers who are possess these skills, creating a healthy and interactive teaching-learning environment (**MHRD, 2020**). Today, the roles of teachers are not only as guides, but also they are innovators, thinkers, and facilitators. As innovators, they invented their teaching competencies regularly according to the demand of the 21st century (**Sulaiman & Ismail, 2020**). Thus, they influence the social, emotional, and mental development of the students (**Sharma, 2015**). In the present era, teachers are facilitators too, because they provide facilitation to the students so that they keep themselves updated in this changing social and technological environment (**Trilling & Fadel, 2010**). For improving the social and moral values of the students, curriculum plays an important role in teaching practices (**Purwanto et al., 2023**).

Teachers must act as educators, knowledge providers, critical thinkers, effective communicators, and life skill developers. These depend on how well they received and delivered 21st-century skills into their classroom teaching (**Saavendra and Opfer, 2012**). 21st-century skills impact life skills such as flexibility, leadership, initiative, productivity, and social skills too (**Bellanca et al., 2010**). The teachers, who involve the soft skills in their classroom teaching, lesson the students about how to fight the critical situation (**Lwono Faith Mbua, 2024**). The teachers who understand the curriculum better also have more effective teaching practices (**Jacobson-Lundeberg, 2016**).

In psychology creativity is defined as the capacity to produce novel, original work of an individual (**Lubart and Thornhill-Miller, 2019**). Critical thinking is one of the highest educational priorities and public needs in modern democratic societies all over the world (**Branden et al., 2023**). About communication, it is not only used as a tool of learning language, but also it is an individual's effective competence of discourse, dialogue, and strategic communication (**Ehlers & Eigbrecht, n.d.**). Collective participation of the teachers provides an opportunity for collaborative learning that develops social and communication skills of

students as well as teachers (**Haug & Mork, 2021**). Today, teachers face various challenges to teach the Z-generation students because they have deep knowledge about information and digital literacy. The reason is that they are living in the age of digitalization (**Gündüzalp, 2021**).

Now questions arise: Does the primary school's curriculum provide 21st-century-skills-based education to its stakeholders? Especially to the perfection of primary teachers. Does it reflect on the teaching practices of the teachers? If the answer is 'Yes,' this is researched in this topic to find out the problem and its solutions. Here, "Tribal District" refers to the district that has been identified by the central government of India (**Gazette of India, 2020**) as needing special attention and priorities in the field of primary education, which is the base of all education systems (**Şahin & Han, 2020**).

2. Objectives of the Study

- To investigate how primary teachers in rural and remote areas perceive their 21st-century skills.
- To identify the obstacles to primary education and offer suggestions for creating a successful **NCF-TE**.
- To provide comprehensive professional training (**CPD**) to primary school teachers .
- To improve primary school teachers' high-order thinking skills (**HOTS**) in accordance with 21st-century competencies.

3. Hypotheses

H₀₁ : There is no significant difference among primary teachers about the perception of 21st century skills.

H₀₂ : There is no significant positive relationship of perceptions about 21st century skills of the primary teachers.

4. Proposed Methodology

4.1 Design of Research

Using the survey method, the researcher employed a quantitative research design. In order to ensure accurate data analysis, the survey method of research went beyond simply gathering data and meticulously tabulating it. To determine the contribution of variances in paired and differed, a comparative analysis was conducted in this study.

4.2 Population of the Study

This study was framed by collecting data from 60 government schools and their 120 primary teachers in three tribal blocks, Gourella, Pendra, and Marwahi, of GPM, Chhattisgarh. The teachers were also divided into two parts, which were the school head and assistant teachers, so that the comparative study was done

according to its hypothesis. To determine the population of the study, the researcher used stratified random sampling for the numbers of primary teachers from the three blocks of the tribal district of GPM. The study was according to classification as stream, sex, types of teachers, and blocks.

4.3 Data Collection Procedures

For collecting data, the researcher took help from DIET's teacher-students who were studying in the D.El.Ed. course in the first and second years. They were divided into three groups for each block. Before collecting data, a one-day briefing was held in the DIET conference hall. There were some important guidelines, and instruction was given by the researcher. The principal of DIET took an important initiative, and an order letter for each school's head was given to every teacher—students informing high authorities of the related departments so that data could be collected manually without any hurdles.

4.4 Data Collecting Tool

A perception scale for measuring 21st-century skills, which has five domains of 21st-century skills (creativity, critical thinking, communication skills, collaboration, and information, media, and technology skills) with twenty-five statements, was used (**Arnav Kundu, 2022**). It was also reused in research topics in the Pre-Service Teacher Education Program of Bihar with Reference to 21st Century Skills (**Kiran and Elizabeth, 2025**). In this tool, a five-point rating scale of 1 to 5 marks was given, where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. All the collected data were tabulated, analyzed, and interpreted in this research.

4.5 Statistics that were preferred

Two types of statistics were preferred for analyzing the data. In descriptive statistics, mean and standard deviation were used. As inferential statistics, correlation, t-tests, and ANOVA were employed at the 5% level of significance. By mean we found the perception of the teachers of primary school from strongly disagree to strongly agree. By correlation the researcher analyzed the rank of perfection; t-tests and ANOVA were used for comparative study of the perfection of the teachers paired or differed.

5.Finding

H₀₁ : There is no significant differences among teachers about the perception of 21st century skills.

The findings of the research are given below. In table 1, there are mentions , the mean of teachers' (ATs) and headmasters' (HMs) perceptions about 21st-century skills. It was found that many ATs and HMs had similar responses, which were "agree" and "strong agree" about statements. The standard deviation is also

Table 01 : 21st Century Skills										
21st Century Skills	Teacher	Pendra			Gaurella			Marwahi		
		Mean	Results	Std. Dev.	Mean	Results	Std. Dev.	Mean	Results	Std. Dev.
Creativity	HM	19.33	A	1.49	20.06	SA	2.45	20.16	SA	2.7
	AT	18.86	A	2.47	19.93	A	2.53	19.26	A	2.87
Critical thinking	HM	18.86	A	1.91	18.04	A	1.7	20.13	SA	3.51
	AT	19.8	A	2.19	19.66	A	2.15	20.13	SA	2.09
Communication	HM	20.66	SA	1.77	19.33	A	3.19	19.73	A	2.62
	AT	20.04	SA	1.74	19.66	A	1.71	21.33	SA	1.74
Collaboration	HM	18.73	A	2.38	20.35	SA	2.14	18.46	A	2.47
	AT	18.33	A	1.99	18.4	A	1.44	18.33	A	2.55
IMTS	HM	18.8	A	2.92	19.33	A	1.13	19.73	A	3.25
	AT	18.73	A	2.47	19.06	A	7.62	23.66	SA	12.34
Total	HM	96.38	4A,1S A	10.47	97.11	3A,2SA	10.61	98.21	3A,2SA	14.55
	AT	95.76	4A,1S A	10.86	96.71	5A,0SA	15.45	102.71	2A,3SA	21.59
Grand Total		192.14	8A,2S A	21.33	193.82	8A,2SA	26.06	200.92	5A,5SA	36.14

A – Agree , SA- Strong Agree

similar in results, but there was high deviation in IMTS skills, which were seen in blocks Gaurella and Marwahi. Gaurella block is defined as an aspirational block by the Central Government of India (Niti Ayog, 2020)

In table 2 the result of the ANOVA test was given. It represents the total results of the tribal district. For analyzing the data, it was divided into three groups according to blocks: Pendra, Gaurella, and Marwahi, District GPM of Chhattisgarh. In this test, the perceptions about 21st-century skills of ATs was found to be paired and HMs was found differed in a significance. Thus ATs null hypothesis was accepted and HMs null hypothesis was rejected.

Table- 2				
ANOVA Test on 21st Century Skills				
Variables	type of teachers	Df	Computed F-value	F-critical
21st Century Skills	HM	14	7.46	3.74
	AT	14	0.04	3.74

The results of table 3, which was a t-test, in this test , functioned the teachers in two groups, ATs and HMs. Here, the framed hypothesis was accepted because the computed t-value was less than the value of the t-table. Thus, the perceptions about 21st-century skills of primary teachers were paired.

Table 3 : t -Test on 21st Century Skills						
21st Century Skills	HM		AT		Computed t - value	t - Table value
	Mean	SD	Mean	SD		
Creativity	59.55	6.64	58.05	7.87	0.56	2.05
Critical thinking	57.03	7.12	59.59	6.43	-1.03	2.05
Communication	59.72	7.58	61.03	5.19	-0.55	2.05
Collaboration	57.54	6.99	55.06	5.98	1.04	2.05
IMTS	57.86	7.3	61.45	22.43	-0.58	2.05

The result found in table 4, which was based on the t-test, that was the male and female groups had similar perceptions about the framed variables, and the finding was not amazing. Both male and female thinking styles were paired, not different. Similar findings in table 5, which are based on streams vice science and arts. There were not significant differences too.

Table 4 : t -Test according to Genders				
Variables	Gender/sex	Df	Computed t-value	tabulated t -value
21st Century Skills	M	88	0.9	1.99
	F			

Table 5 : t -Test according to Streams				
Variables	Streams	Df	Computed t-value	tabulated t -value
21st Century Skills	Science	88	-0.47	1.99
	Arts			

H₀₂ : There is no significant positive relationship of perceptions about 21st century skills of the primary school teachers.

This hypothesis test was remained to check out the correlations among the norms of 21st-century skills. In this correlation test, the result found remarkable facts: between creativity and critical thinking, the coefficient of correlation was moderately and low positive. The coefficient of HMs was +0.43, and the coefficient of ATs was +0.36. It can be seen in table 6.

Table 6 : Co-efficient of Correlation				
SN.	Types of teachers	Variables		r
1	HM	Creativity	Critical thinking	0.43
2	AT	Creativity	Critical thinking	0.36

In table 7, the same statistic, which was based on a correlation test, was applied to two variables: communication and collaboration. By this study, the researcher found a low coefficient of correlation. The coefficient of correlation of HMs was +0.23, and the coefficient of correlation of ATs was +0.38.

Table 7 : Co - efficient of Correlation				
SN.	Types of teachers	Variables		r
1	HM	Communication	Collaboration	0.23
2	AT	Communication	Collaboration	0.38

In table 8, the results were astonished because of the correlation of IMTF among the '4C' were low to moderate but the creativity skills of HMs were greater than ATs. That means they have more teaching experience than the ATs.

TABLE -8				
Types of teachers		Variables		r
HM	IMTS	Creativity	0.55	
		Critical thinking	0.23	
		Communication	0.24	
		Collaboration	0.39	
Types of teachers		Variables		r
AT	IMTS	Creativity	0.20	
		Critical thinking	0.40	
		Communication	0.36	
		Collaboration	0.26	

6. key finding areas

In the above research topic, the results were observed that in the tribal district, all kinds of primary teachers have abilities of creativity, critical thinking, collaboration, communication, information, and digital literacy skills. Digital literacy is an effective tool in performing classroom teaching for primary teachers (**Putri & Asrizal*, 2023**). In this research, they agreed and strongly agreed on varied statements of perfection in norms of 21st-century skills. But in the area of information and technology skills (**IMTF**), they have faced problems in teaching practices. But the HMs perceptions and correlations between IMTF and creativity +.55 it means IMTS develops the creativity of the teachers . The digital media and AI tools are a blessing for the teacher in a pandemic and critical situation (**Ng et al., 2023**). This district belongs to a geographical and terrain region covered with hills, plateaus, and forests, where strong infrastructure constructions, including Internet, are needed.

The relationship between creativity and critical thinking has always had a strong correlation. Some psychologists argued that creativity is the result of critical thinking (**Secer & Baser Secer, 2025**). But in this research there was a low and moderate relationship among the primary teachers. This affects the teaching quality and learning outcomes of the students. Communication and collaboration are the gateway skills of the teachers. With these skills, one can develop his thinking styles and life skills too (**Jacobson-Lundeberg, 2016**). But in this research there was a low relationship among the primary teachers; thus, their teaching performance was also affected.

7. Recommendations

- In order to improve instructors' and students' IMTS skills, infrastructure such as roads, water, power, smart classroom and internet facility should be built in remote and rural locations. Concerned departments must take an integrated strategy. Only when politicians demonstrate an interest in infrastructure development will it be feasible.
- Higher authorities, including directors, joint directors, district education officers, district mission coordinators, block education officers, cluster principals, and BRCs, should be held accountable for conducting routine inspections.
- Every year, a professional development program for teachers will be offered to enhance their 21st-century skills. Specially AI based and creative content learning training program will offer to every primary teachers.
- To adapt the curriculum to the need for 21st-century capabilities. Primary education will adopt cutting-edge concepts including activity-based learning, project and theme-based learning, exposure visit learning, evidence-based learning, and AI-based learning. It requires an educational program for sustainable development, Viksit Bharat and Anjor Chhatisgarh-2047.

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Teachers must act as educators, knowledge providers, critical thinkers, effective communicators, and life skill developers. These depend on how well they received and delivered 21st-century skills into their classroom teaching (**Saavendra and Opfer, 2012**). 21st-century skills impact life skills such as flexibility, leadership, initiative, productivity, and social skills too (**Bellanca et al., 2010**). The teachers, who involve the soft skills in their classroom teaching, lesson the students about how to fight the critical situation (**Lwono Faith Mbua, 2024**). The teachers who understand the curriculum better also have more effective teaching practices (**Jacobson-Lundeberg, 2016**).

In psychology creativity is defined as the capacity to produce novel, original work of an individual (**Lubart and Thornhill-Miller, 2019**). Critical thinking is one of the highest educational priorities and public needs in modern democratic societies all over the world (**Branden et al., 2023**). About communication, it is not only used as a tool of learning language, but also it is an individual's effective competence of discourse, dialogue, and strategic communication (**Ehlers & Eigbrecht, n.d.**). Collective participation of the teachers provides an opportunity for collaborative learning that develops social and communication skills of

students as well as teachers (**Haug & Mork, 2021**). Today, teachers face various challenges to teach the Z-generation students because they have deep knowledge about information and digital literacy. The reason is that they are living in the age of digitalization (**Gündüzalp, 2021**).

Now questions arise: Does the primary school's curriculum provide 21st-century-skills-based education to its stakeholders? Especially to the perfection of primary teachers. Does it reflect on the teaching practices of the teachers? If the answer is 'Yes,' this is researched in this topic to find out the problem and its solutions. Here, "Tribal District" refers to the district that has been identified by the central government of India (**Gazette of India, 2020**) as needing special attention and priorities in the field of primary education, which is the base of all education systems (**Şahin & Han, 2020**).

2. Objectives of the Study

- To investigate how primary teachers in rural and remote areas perceive their 21st-century skills.
- To identify the obstacles to primary education and offer suggestions for creating a successful **NCF-TE**.
- To provide comprehensive professional training (**CPD**) to primary school teachers .
- To improve primary school teachers' high-order thinking skills (**HOTS**) in accordance with 21st-century competencies.

3. Hypotheses

H₀₁ : There is no significant difference among primary teachers about the perception of 21st century skills.

H₀₂ : There is no significant positive relationship of perceptions about 21st century skills of the primary teachers.

4. Proposed Methodology

4.1 Design of Research

Using the survey method, the researcher employed a quantitative research design. In order to ensure accurate data analysis, the survey method of research went beyond simply gathering data and meticulously tabulating it. To determine the contribution of variances in paired and differed, a comparative analysis was conducted in this study.

4.2 Population of the Study

This study was framed by collecting data from 60 government schools and their 120 primary teachers in three tribal blocks, Gourella, Pendra, and Marwahi, of GPM, Chhattisgarh. The teachers were also divided into two parts, which were the school head and assistant teachers, so that the comparative study was done

according to its hypothesis. To determine the population of the study, the researcher used stratified random sampling for the numbers of primary teachers from the three blocks of the tribal district of GPM. The study was according to classification as stream, sex, types of teachers, and blocks.

4.3 Data Collection Procedures

For collecting data, the researcher took help from DIET's teacher-students who were studying in the D.El.Ed. course in the first and second years. They were divided into three groups for each block. Before collecting data, a one-day briefing was held in the DIET conference hall. There were some important guidelines, and instruction was given by the researcher. The principal of DIET took an important initiative, and an order letter for each school's head was given to every teacher—students informing high authorities of the related departments so that data could be collected manually without any hurdles.

4.4 Data Collecting Tool

A perception scale for measuring 21st-century skills, which has five domains of 21st-century skills (creativity, critical thinking, communication skills, collaboration, and information, media, and technology skills) with twenty-five statements, was used (**Arnav Kundu, 2022**). It was also reused in research topics in the Pre-Service Teacher Education Program of Bihar with Reference to 21st Century Skills (**Kiran and Elizabeth, 2025**). In this tool, a five-point rating scale of 1 to 5 marks was given, where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. All the collected data were tabulated, analyzed, and interpreted in this research.

4.5 Statistics that were preferred

Two types of statistics were preferred for analyzing the data. In descriptive statistics, mean and standard deviation were used. As inferential statistics, correlation, t-tests, and ANOVA were employed at the 5% level of significance. By mean we found the perception of the teachers of primary school from strongly disagree to strongly agree. By correlation the researcher analyzed the rank of perfection; t-tests and ANOVA were used for comparative study of the perfection of the teachers paired or differed.

5.Finding

H₀₁ : There is no significant differences among teachers about the perception of 21st century skills.

The findings of the research are given below. In table 1, there are mentions , the mean of teachers' (ATs) and headmasters' (HMs) perceptions about 21st-century skills. It was found that many ATs and HMs had similar responses, which were "agree" and "strong agree" about statements. The standard deviation is also

Table 01 : 21st Century Skills										
21st Century Skills	Teacher	Pendra			Gaurella			Marwahi		
		Mean	Results	Std. Dev.	Mean	Results	Std. Dev.	Mean	Results	Std. Dev.
Creativity	HM	19.33	A	1.49	20.06	SA	2.45	20.16	SA	2.7
	AT	18.86	A	2.47	19.93	A	2.53	19.26	A	2.87
Critical thinking	HM	18.86	A	1.91	18.04	A	1.7	20.13	SA	3.51
	AT	19.8	A	2.19	19.66	A	2.15	20.13	SA	2.09
Communication	HM	20.66	SA	1.77	19.33	A	3.19	19.73	A	2.62
	AT	20.04	SA	1.74	19.66	A	1.71	21.33	SA	1.74
Collaboration	HM	18.73	A	2.38	20.35	SA	2.14	18.46	A	2.47
	AT	18.33	A	1.99	18.4	A	1.44	18.33	A	2.55
IMTS	HM	18.8	A	2.92	19.33	A	1.13	19.73	A	3.25
	AT	18.73	A	2.47	19.06	A	7.62	23.66	SA	12.34
Total	HM	96.38	4A,1S A	10.47	97.11	3A,2SA	10.61	98.21	3A,2SA	14.55
	AT	95.76	4A,1S A	10.86	96.71	5A,0SA	15.45	102.71	2A,3SA	21.59
Grand Total		192.14	8A,2S A	21.33	193.82	8A,2SA	26.06	200.92	5A,5SA	36.14

A – Agree , SA- Strong Agree

similar in results, but there was high deviation in IMTS skills, which were seen in blocks Gaurella and Marwahi. Gaurella block is defined as an aspirational block by the Central Government of India (Niti Ayog, 2020)

In table 2 the result of the ANOVA test was given. It represents the total results of the tribal district. For analyzing the data, it was divided into three groups according to blocks: Pendra, Gaurella, and Marwahi, District GPM of Chhattisgarh. In this test, the perceptions about 21st-century skills of ATs was found to be paired and HMs was found differed in a significance. Thus ATs null hypothesis was accepted and HMs null hypothesis was rejected.

Table- 2				
ANOVA Test on 21st Century Skills				
Variables	type of teachers	Df	Computed F-value	F-critical
21st Century Skills	HM	14	7.46	3.74
	AT	14	0.04	3.74

The results of table 3, which was a t-test, in this test , functioned the teachers in two groups, ATs and HMs. Here, the framed hypothesis was accepted because the computed t-value was less than the value of the t-table. Thus, the perceptions about 21st-century skills of primary teachers were paired.

Table 3 : t -Test on 21st Century Skills						
21st Century Skills	HM		AT		Computed t - value	t - Table value
	Mean	SD	Mean	SD		
Creativity	59.55	6.64	58.05	7.87	0.56	2.05
Critical thinking	57.03	7.12	59.59	6.43	-1.03	2.05
Communication	59.72	7.58	61.03	5.19	-0.55	2.05
Collaboration	57.54	6.99	55.06	5.98	1.04	2.05
IMTS	57.86	7.3	61.45	22.43	-0.58	2.05

The result found in table 4, which was based on the t-test, that was the male and female groups had similar perceptions about the framed variables, and the finding was not amazing. Both male and female thinking styles were paired, not different. Similar findings in table 5, which are based on streams vice science and arts. There were not significant differences too.

Table 4 : t -Test according to Genders				
Variables	Gender/sex	Df	Computed t-value	tabulated t -value
21st Century Skills	M	88	0.9	1.99
	F			

Table 5 : t -Test according to Streams				
Variables	Streams	Df	Computed t-value	tabulated t -value
21st Century Skills	Science	88	-0.47	1.99
	Arts			

H₀₂ : There is no significant positive relationship of perceptions about 21st century skills of the primary school teachers.

This hypothesis test was remained to check out the correlations among the norms of 21st-century skills. In this correlation test, the result found remarkable facts: between creativity and critical thinking, the coefficient of correlation was moderately and low positive. The coefficient of HMs was +0.43, and the coefficient of ATs was +0.36. It can be seen in table 6.

Table 6 : Co-efficient of Correlation				
SN.	Types of teachers	Variables		r
1	HM	Creativity	Critical thinking	0.43
2	AT	Creativity	Critical thinking	0.36

In table 7, the same statistic, which was based on a correlation test, was applied to two variables: communication and collaboration. By this study, the researcher found a low coefficient of correlation. The coefficient of correlation of HMs was +0.23, and the coefficient of correlation of ATs was +0.38.

Table 7 : Co - efficient of Correlation				
SN.	Types of teachers	Variables		r
1	HM	Communication	Collaboration	0.23
2	AT	Communication	Collaboration	0.38

In table 8, the results were astonished because of the correlation of IMTF among the '4C' were low to moderate but the creativity skills of HMs were greater than ATs. That means they have more teaching experience than the ATs.

TABLE -8				
Types of teachers		Variables		r
HM	IMTS	Creativity	0.55	
		Critical thinking	0.23	
		Communication	0.24	
		Collaboration	0.39	
Types of teachers		Variables		r
AT	IMTS	Creativity	0.20	
		Critical thinking	0.40	
		Communication	0.36	
		Collaboration	0.26	

6. key finding areas

In the above research topic, the results were observed that in the tribal district, all kinds of primary teachers have abilities of creativity, critical thinking, collaboration, communication, information, and digital literacy skills. Digital literacy is an effective tool in performing classroom teaching for primary teachers (**Putri & Asrizal*, 2023**). In this research, they agreed and strongly agreed on varied statements of perfection in norms of 21st-century skills. But in the area of information and technology skills (**IMTF**), they have faced problems in teaching practices. But the HMs perceptions and correlations between IMTF and creativity +.55 it means IMTS develops the creativity of the teachers. The digital media and AI tools are a blessing for the teacher in a pandemic and critical situation (**Ng et al., 2023**). This district belongs to a geographical and terrain region covered with hills, plateaus, and forests, where strong infrastructure constructions, including Internet, are needed.

The relationship between creativity and critical thinking has always had a strong correlation. Some psychologists argued that creativity is the result of critical thinking (**Secer & Baser Secer, 2025**). But in this research there was a low and moderate relationship among the primary teachers. This affects the teaching quality and learning outcomes of the students. Communication and collaboration are the gateway skills of the teachers. With these skills, one can develop his thinking styles and life skills too (**Jacobson-Lundeberg, 2016**). But in this research there was a low relationship among the primary teachers; thus, their teaching performance was also affected.

7. Recommendations

- In order to improve instructors' and students' IMTS skills, infrastructure such as roads, water, power, smart classroom and internet facility should be built in remote and rural locations. Concerned departments must take an integrated strategy. Only when politicians demonstrate an interest in infrastructure development will it be feasible.
- Higher authorities, including directors, joint directors, district education officers, district mission coordinators, block education officers, cluster principals, and BRCs, should be held accountable for conducting routine inspections.
- Every year, a professional development program for teachers will be offered to enhance their 21st-century skills. Specially AI based and creative content learning training program will offer to every primary teachers.
- To adapt the curriculum to the need for 21st-century capabilities. Primary education will adopt cutting-edge concepts including activity-based learning, project and theme-based learning, exposure visit learning, evidence-based learning, and AI-based learning. It requires an educational program for sustainable development, Viksit Bharat and Anjor Chhatisgarh-2047.

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