



TECHNOLOGICAL KNOWLEDGE AND ATTITUDES OF SECONDARY SCHOOL TEACHERS WITH SPECIAL FOCUS TO COOCH BEHAR DISTRICT, WEST BENGAL: AN ANALYSIS

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Abstract:

Technological knowledge and attitudes of secondary school teachers play a pivotal role in the effective integration of Information and Communication Technology (ICT) in teaching-learning processes. Technological knowledge refers to teachers' understanding and proficiency in using digital tools, software, online platforms, and emerging technologies to design, deliver, and assess instruction. It includes operational skills, pedagogical application of technology and the ability to adapt technological resources to diverse classroom contexts. Teachers' attitudes toward technology significantly influence their willingness to adopt and sustain ICT-based practices. In this article; an analysis on technological knowledge and attitudes of secondary school teachers with special focus to Cooch Behar District, West Bengal have been discussed.

Keywords: Technological, Knowledge, Attitudes, Secondary School Teachers, Cooch Behar.

INTRODUCTION:

Technology has emerged as a cornerstone of modern education, profoundly transforming the teaching-learning process. With rapid advancements in digital tools, communication platforms, and educational software, technology no longer serves merely as a supplementary resource but as an integral component of effective pedagogy (Allen, C, & Berggren, J., 2016). The integration of technology in schools has the potential to enhance instructional delivery, foster student engagement, support differentiated learning, and prepare learners for a world driven by digital literacy (Begum, S. & Ramachandran, R., 2018). However, the success of technology integration largely depends on teachers' technological knowledge, their attitudes toward technology and the broader educational ecosystem in which they operate (Hemabala, J., 2015). Teachers are pivotal agents in implementing educational innovations. Their readiness, confidence, and beliefs about technology significantly influence how, when, and why technology is used in classrooms (Yeo, M.M.L., 2014). The effective use of technology in education

requires not only mastery of content and pedagogical strategies but also a robust understanding of how technology enhances teaching and learning (Iema, H., Volman, M., Wilfred Admiraal & Geert ten Dam, 2012). In this context, technological knowledge encompasses not just technical proficiency, but also the ability to select appropriate technological tools that align with curricular goals and student needs (Joaquim, G., 2017). Simultaneously, attitudes toward technology shape teachers' willingness to explore, adopt, and sustain its use in instructional practices (Ouma, G.O., Awuor, F.M. & Kyambo, B., 2013). Positive attitudes can motivate innovative pedagogic approaches, while negative perceptions may inhibit teachers from leveraging available technological resources (Nachimuthu, K., 2010).

In India, secondary education serves as a critical stage in shaping students' academic trajectories and future opportunities. West Bengal, as one of India's culturally rich states with a diverse socio-economic profile, has increasingly prioritized educational reforms, including the adoption of information and communication technologies (ICT) in schools. Government initiatives — such as the Digital India campaign and state-level ICT in Education programs — aim to bridge the digital divide and expand access to quality education. Nevertheless, disparities still exist between urban and rural areas in terms of infrastructure, digital access, and teacher preparedness (Zhiwen, H. & McGrath, I., 2011). The Cooch Behar district, located in the northern part of West Bengal, represents a unique educational microcosm where rural and semi-urban schools confront both opportunities and challenges in integrating technology into classrooms. Despite policy efforts to enhance ICT infrastructure in schools, research indicates that teachers' technological knowledge and attitudes remain inconsistent across regions. In many instances, teachers report limited professional development opportunities, inadequate support systems, or resistance to change due to perceived complexity of technology or fear of obsolescence. The centrality of teachers' roles in educational transformation, it becomes essential to examine not only what resources are available but how teachers perceive and utilize them. To exploring teachers' technological knowledge and attitudes provides valuable insights into the readiness of the education system to meet contemporary learning demands. Thus, this study focuses on secondary school teachers in the Cooch Behar district of West Bengal, aiming to understand their levels of technological knowledge, the nature of their attitudes toward technology use in teaching, and the factors that influence these dimensions. By situating the investigation within a specific regional context, the research contributes to a nuanced understanding of how educational policies translate into classroom practices at the grassroots level. The findings from this study are expected to inform policymakers, teacher educators, and school administrators in designing targeted interventions that support meaningful technology integration, enhance teacher capacity, and ultimately improve student learning outcomes. The objective of the study

was to an analysis on technological knowledge and attitudes of secondary school teachers with special focus to Cooch Behar District, West Bengal.

RESEARCH METHODOLOGY:

Research methodology denotes the systematic and theoretical analysis of the methods utilized within a specific domain. It encompasses the theoretical analysis of actions and principles. It promotes the utilization of diverse strategies and tactics to collect substantial data and empirical evidence on a large scale.

Study Area: Cooch Behar District, West Bengal.

Variables:

Dependent Variables: Age, Gender, Marital status, Religion, Caste, Schools.

Independent Variables: Teachers, Mobile Learning, New Technology Learning, Computer Knowledge Level, Attitudes, Perception.

Research Design: In this research, quantitative research design has been used.

Primary Data: In this research, primary data has been used.

Sampling Plan: In this research, simple random sampling plan has been used.

Sample Size: 600 (Male: 300, Female: 300).

Methodology: The respondents were collected from the selected schools of Cooch Behar district, West Bengal. The secondary school teachers belong to the selected schools, but primary data have been collected outside the school premises. The questionnaire sheets were distributed in favor of the respondents after clearing the research objectives. The age of the respondents were 30 to 60 years. Sufficient time was given in favor of the respondents. After completion of their sheet, the sheet was collected for data analysis and interpretation.

Research Tools: In this research, structured questionnaires (5 Point Likert Scale sheet) were used. Abbreviations Used: Strongly Agree (SA-5 points), Agree (A-4 points), Neutral (N-3 points), Disagree (D-2 points), Strongly Disagree (SD-1 point). Tools Used:

- Scale for secondary school teacher's attitude level towards new technology.
- Scale for secondary school teacher's perception level towards the mobile learning, new technology learning and computer knowledge.

Data Analysis and Interpretation: In this research, pie charts were used.

DATA ANALYSIS, INTERPRETATION, RESULTS AND DISCUSSION:

(a) Personal Profile:

Table 1. Gender:

Options	Respondents	%
Male	300	50
Female	300	50
Total	600	100

(Source: Primary Data, Survey)

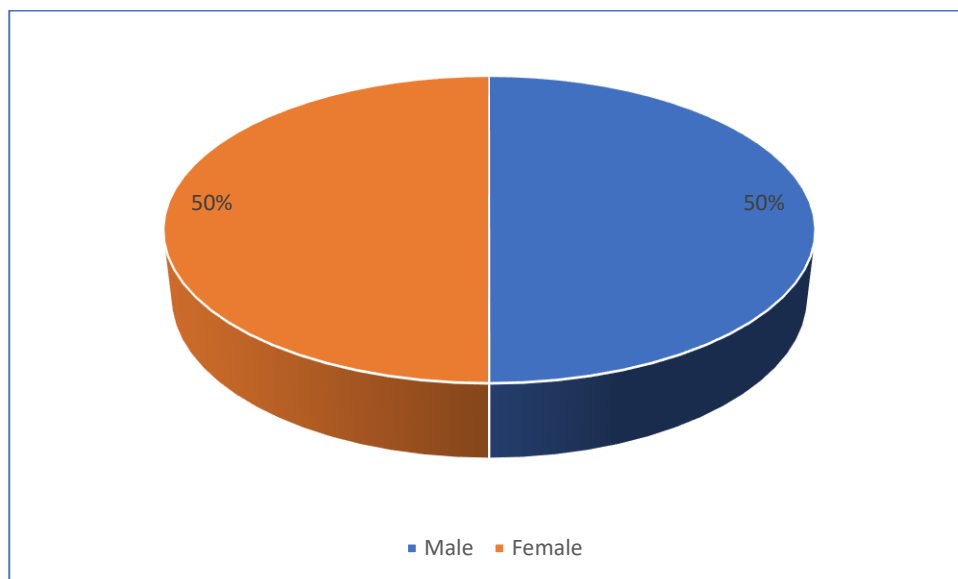


Figure 1. Gender (%)

From the above table & figure, it was found that the percentage of Male 50% & Female 50%.

Table 2. Age (in years):

Options	Respondents	%
30-40	321	53.5
41-50	193	32.17
51-60	86	14.33
Total	600	100

(Source: Primary Data, Survey)

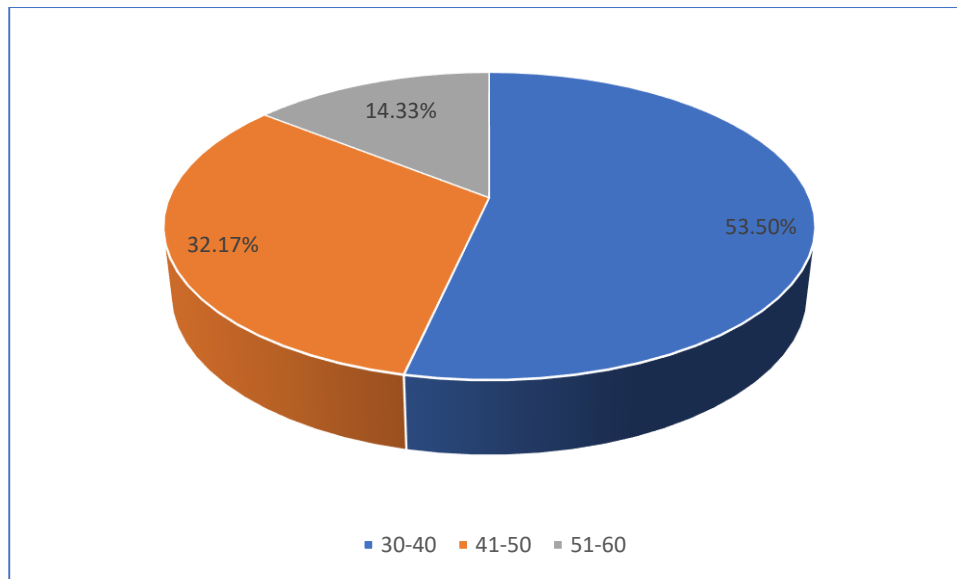


Figure 2. Age (in years) (%)

From the above table & figure, it was found that the percentage of 30-40 years: 53.5%, 41-50 years: 32.17% & 51-60 years: 14.33%.

Table 3. Marital Status:

Options	Respondents	%
Married	376	62.67
Unmarried	102	17
Separated	75	12.5
Others	47	7.83
Total	600	100

(Source: Primary Data, Survey)

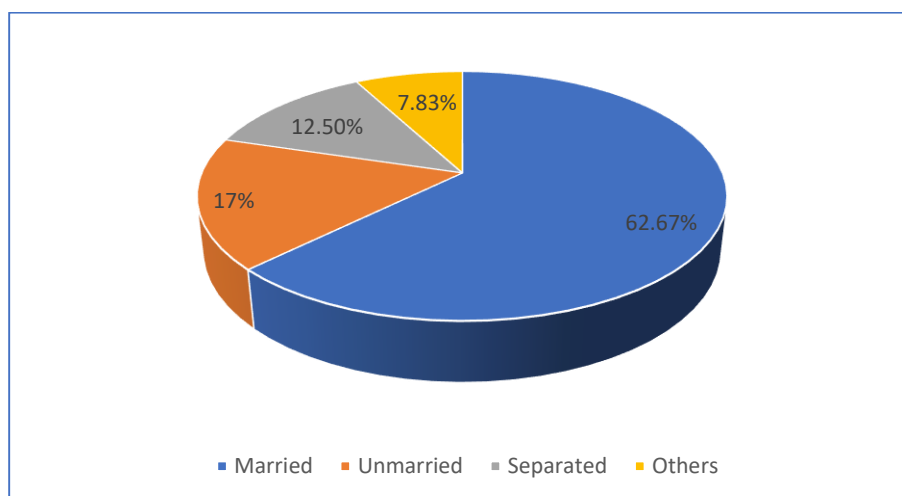


Figure 3. Marital Status (%)

From the above table & figure, it was found that the percentage of Married: 62.67%, Unmarried: 17%, Separated: 12.5% & Others: 7.83%.

(b) Secondary School Teacher's Attitude Level Towards New Technology:

Table 4. I believe new technologies improve teaching effectiveness:

Options	Respondents	%
SA	112	18.67
A	183	30.5
N	28	4.67
D	145	24.16
SD	132	22
Total	600	100

(Source: Primary Data, Survey)

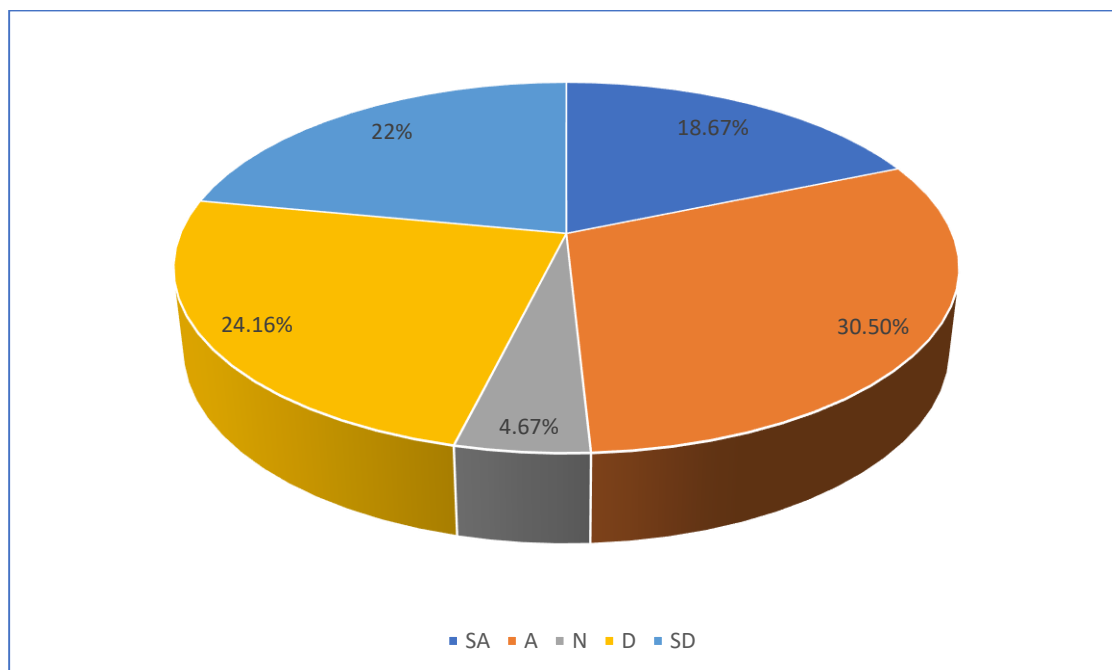


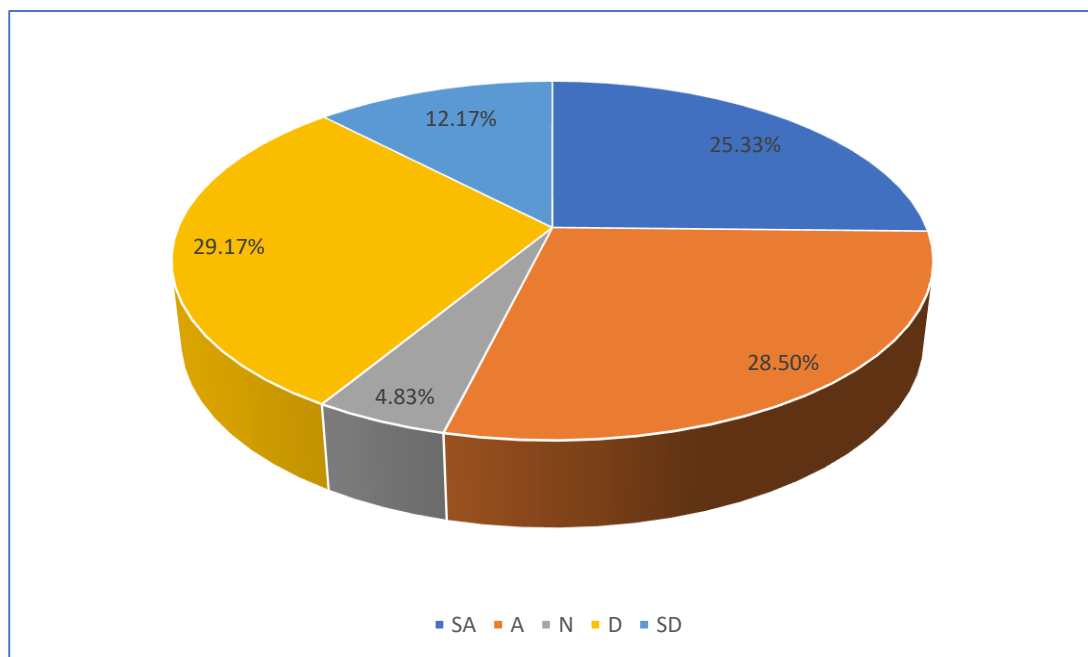
Figure 4. I believe new technologies improve teaching effectiveness (%)

From the above table & figure, it was found that the percentage of SA: 18.67%, A: 30.5%, N: 4.67%, D: 24.16% & SD: 22%.

Table 5. I feel confident using new technologies in my classroom:

Options	Respondents	%
SA	152	25.33
A	171	28.5
N	29	4.83
D	175	29.17
SD	73	12.17
Total	600	100

(Source: Primary Data, Survey)

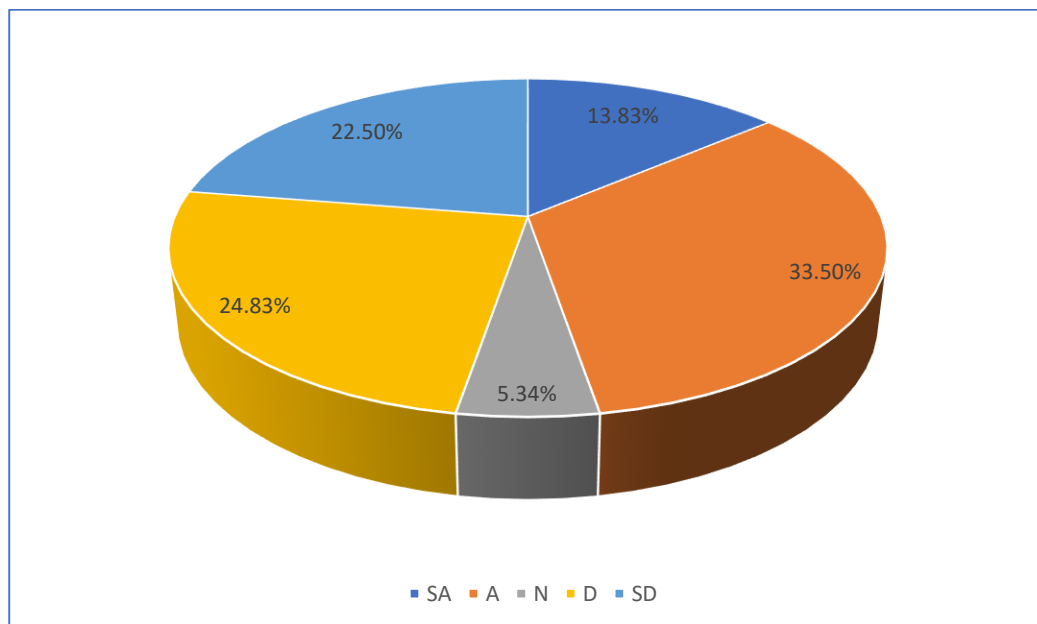
**Figure 5. I feel confident using new technologies in my classroom (%)**

From the above table & figure, it was found that the percentage of SA: 25.33%, A: 28.5%, N: 4.83%, D: 29.17% & SD: 12.17%.

Table 6. New technologies make the teaching–learning process more engaging:

Options	Respondents	%
SA	83	13.83
A	201	33.5
N	32	5.34
D	149	24.83
SD	135	22.5
Total	600	100

(Source: Primary Data, Survey)

**Figure 6. New technologies make the teaching–learning process more engaging (%)**

From the above table & figure, it was found that the percentage of SA: 13.83%, A: 33.5%, N: 5.34%, D: 24.83% & SD: 22.5%.

Table 7. I believe integrating technology enhances students' understanding:

Options	Respondents	%
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SA	150	25
A	191	31.83
N	25	4.17
D	182	30.33
SD	52	8.67
Total	600	100

(Source: Primary Data, Survey)

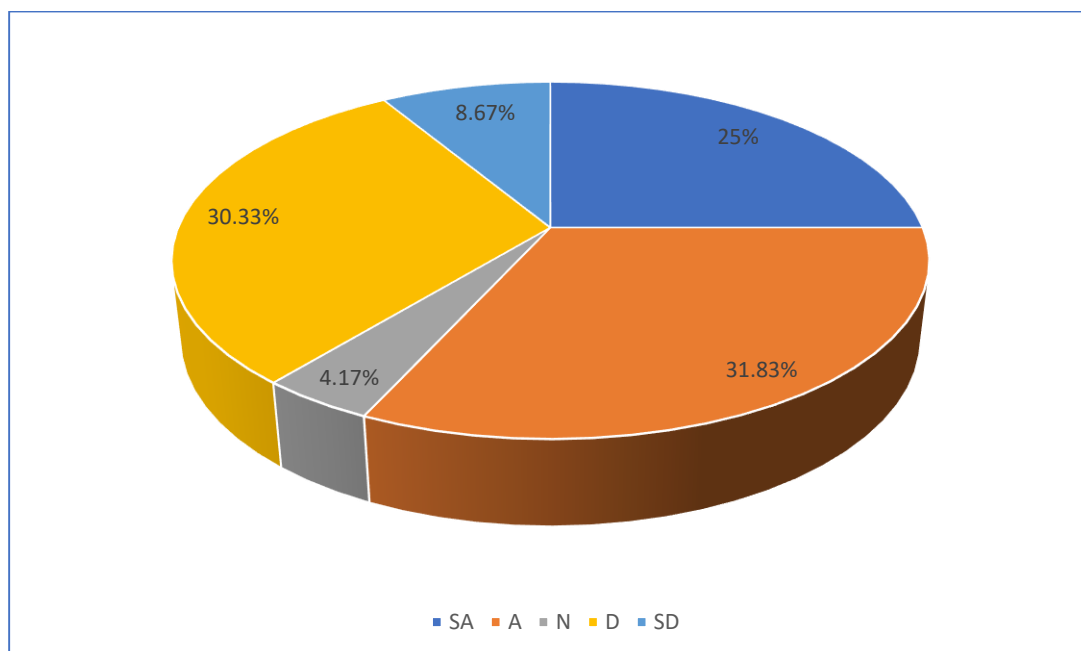


Figure 7. I believe integrating technology enhances students' understanding (%)

From the above table & figure, it was found that the percentage of SA: 25%, A: 31.83%, N: 4.17%, D: 30.33% & SD: 8.67%.

Table 8. I feel that technology is essential for modern education:

Options	Respondents	%
SA	138	23
A	211	35.17

N	30	5
D	120	20
SD	101	16.83
Total	600	100

(Source: Primary Data, Survey)

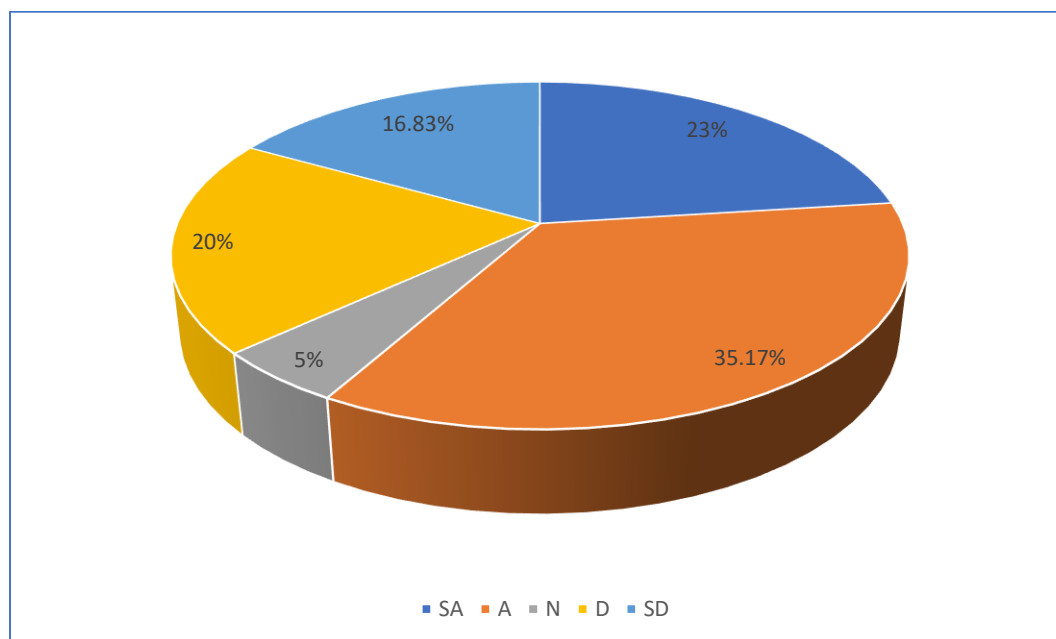


Figure 8. I feel that technology is essential for modern education (%)

From the above table & figure, it was found that the percentage of SA: 23%, A: 35.17%, N: 5%, D: 20% & SD: 16.83%.

Table 9. I frequently use new technologies in my teaching practices:

Options	Respondents	%
SA	106	17.67
A	219	36.5
N	24	4
D	128	21.33
SD	123	20.5

Total	600	100
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(Source: Primary Data, Survey)

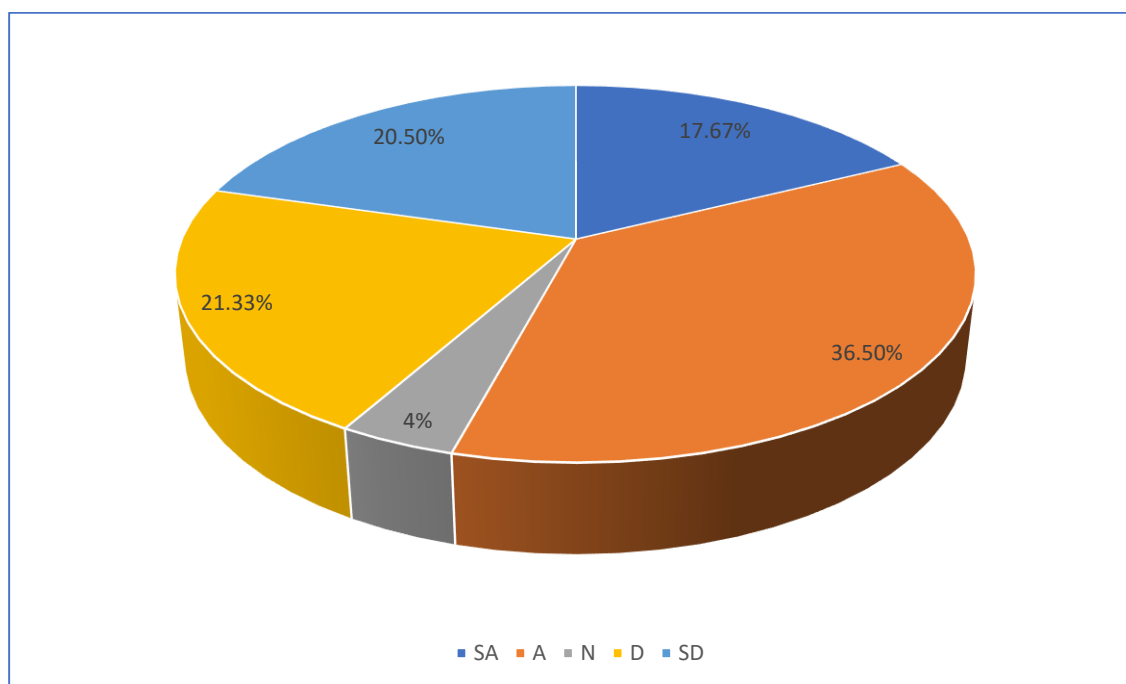


Figure 9. I frequently use new technologies in my teaching practices (%)

From the above table & figure, it was found that the percentage of SA: 17.67%, A: 36.5%, N: 4%, D: 21.33% & SD: 20.5%.

(c) Secondary School Teacher's Perception Level towards the Mobile Learning, New Technology Learning and Computer Knowledge:

(i) Mobile learning perception:

Table 10. I feel comfortable using mobile phones for teaching-learning activities:

Options	Respondents	%
SA	88	14.67
A	117	19.5
N	35	5.83
D	214	35.67

SD	146	24.33
Total	600	100

(Source: Primary Data, Survey)

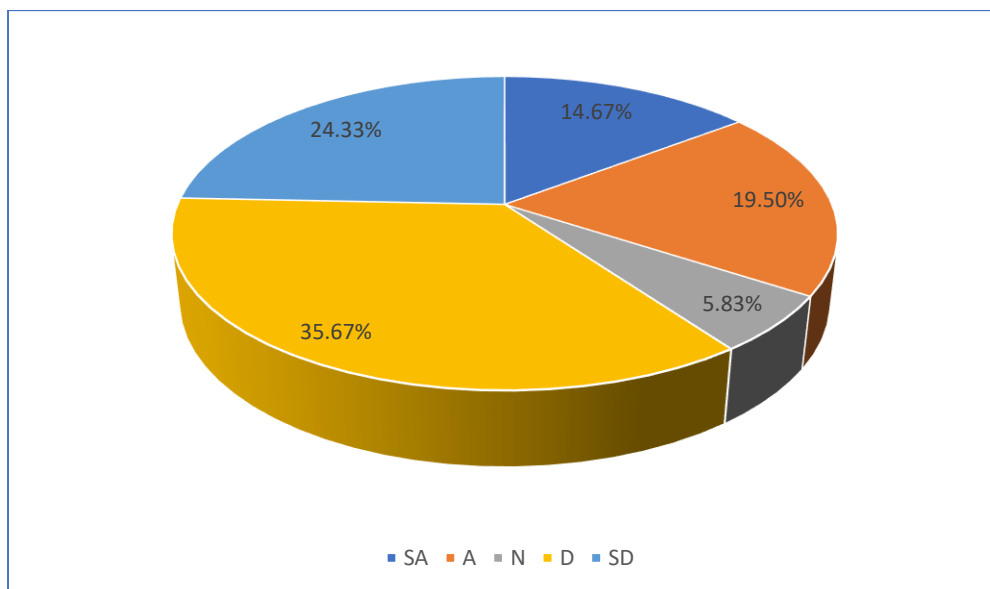


Figure 10. I feel comfortable using mobile phones for teaching-learning activities (%)

From the above table & figure, it was found that the percentage of SA: 14.67%, A: 19.5%, N: 5.83%, D: 35.67% & SD: 24.33%.

Table 11. Mobile learning improves students' engagement in the classroom:

Options	Respondents	%
SA	161	26.83
A	188	31.33
N	23	3.83
D	147	24.5
SD	81	13.5
Total	600	100

(Source: Primary Data, Survey)

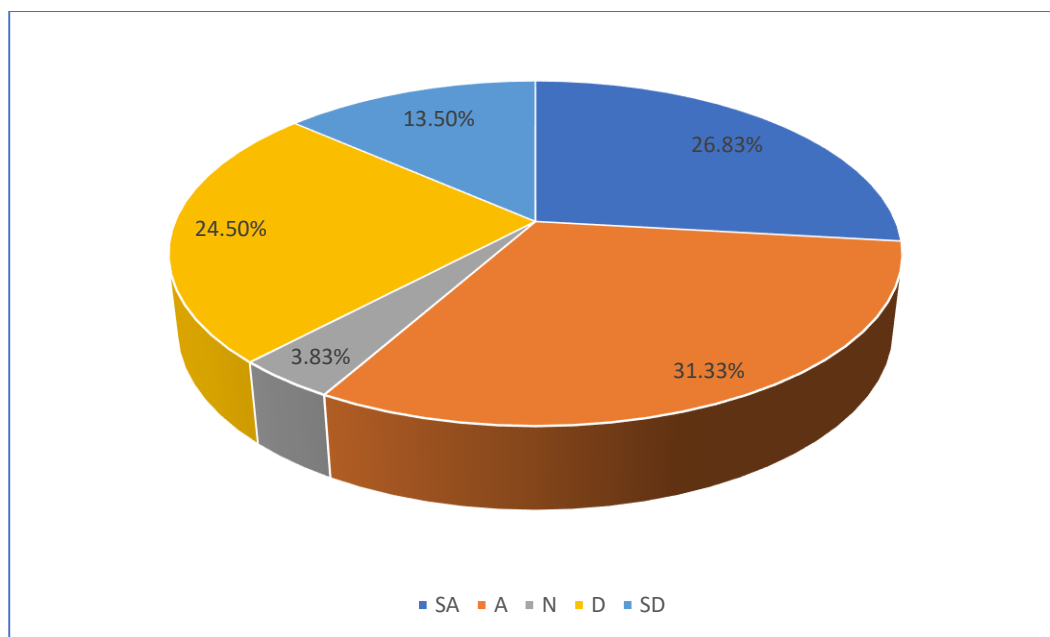


Figure 11. Mobile learning improves students' engagement in the classroom (%)

From the above table & figure, it was found that the percentage of SA: 26.83%, A: 31.33%, N: 3.83%, D: 24.5% & SD: 13.5%.

(ii) Perception towards New Technology Learning:

Table 12. I am willing to adopt new technologies in my teaching practice:

Options	Respondents	%
SA	57	9.5
A	104	17.33
N	28	4.67
D	227	37.83
SD	184	30.67
Total	600	100

(Source: Primary Data, Survey)

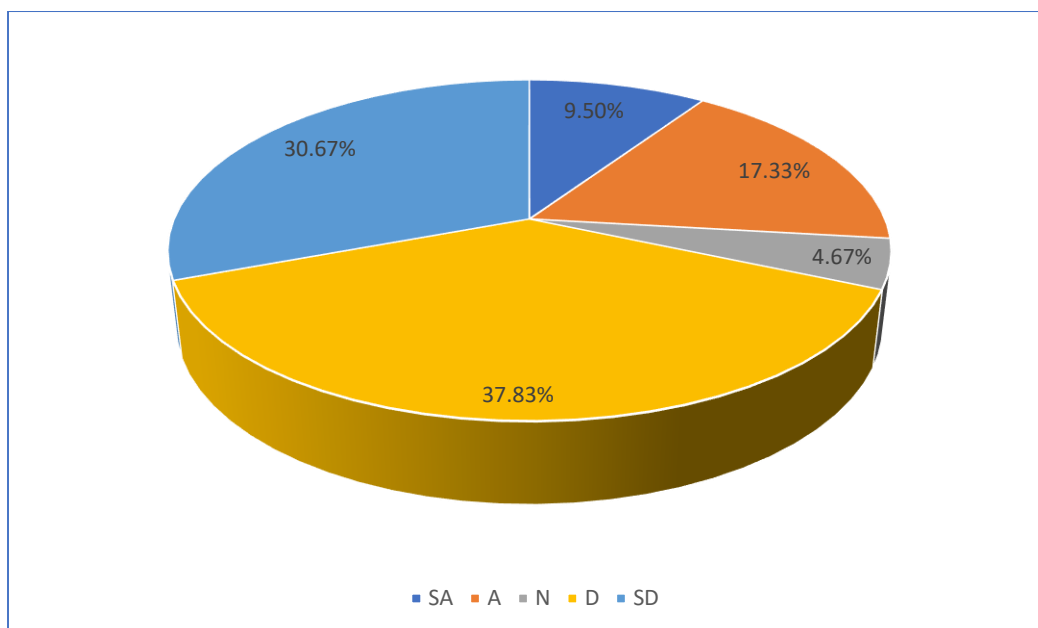


Figure 12. I am willing to adopt new technologies in my teaching practice (%)

From the above table & figure, it was found that the percentage of SA: 9.5%, A: 17.33%, N: 4.67%, D: 37.83% & SD: 30.67%.

Table 13. New technology helps in improving teaching efficiency:

Options	Respondents	%
SA	194	32.33
A	202	33.67
N	27	4.5
D	110	18.33
SD	67	11.17
Total	600	100

(Source: Primary Data, Survey)

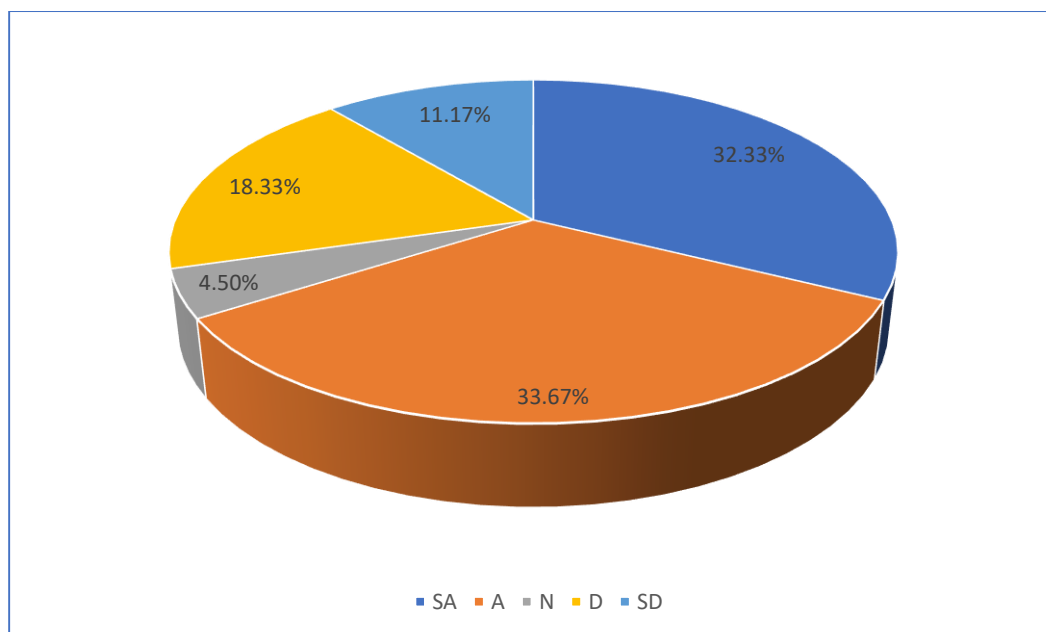


Figure 13. New technology helps in improving teaching efficiency (%)

From the above table & figure, it was found that the percentage of SA: 32.33%, A: 33.67%, N: 4.5%, D: 18.33% & SD: 11.17%.

(iii) Computer Knowledge perception:

Table 14. I have adequate basic computer skills (typing, file handling, browsing):

Options	Respondents	%
SA	157	26.17
A	163	27.17
N	27	4.5
D	145	24.16
SD	108	18
Total	600	100

(Source: Primary Data, Survey)

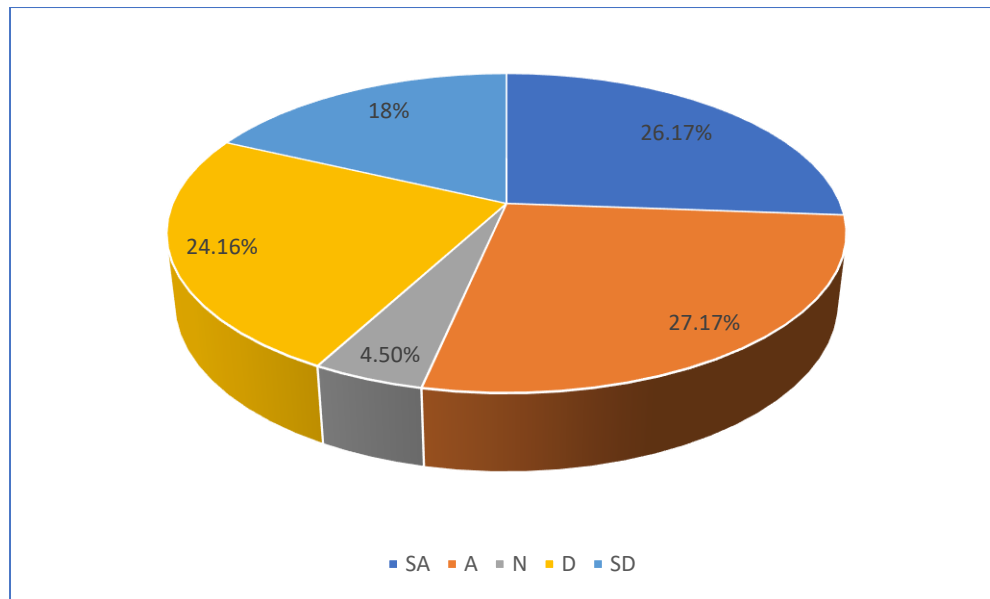


Figure 14. I have adequate basic computer skills (typing, file handling, browsing) (%)

From the above table & figure, it was found that the percentage of SA: 26.17%, A: 27.17%, N: 4.5%, D: 24.16% & SD: 18%.

Table 15. I can operate common software such as MS Office/Google Workspace:

Options	Respondents	%
SA	179	29.83
A	190	31.67
N	33	5.5
D	148	24.67
SD	50	8.33
Total	600	100

(Source: Primary Data, Survey)

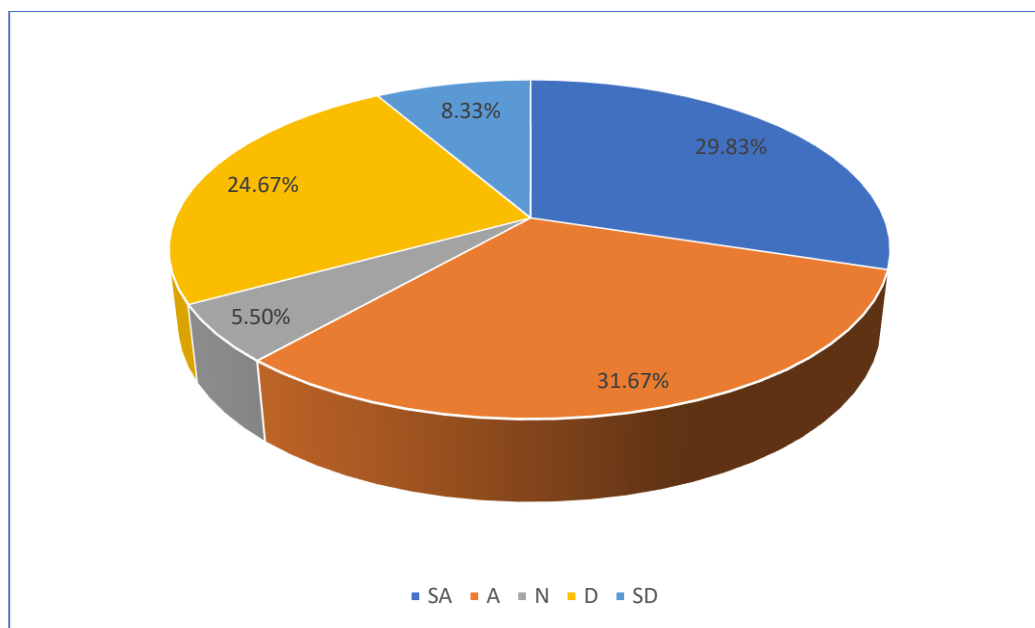


Figure 15. I can operate common software such as MS Office/Google Workspace (%)

From the above table & figure, it was found that the percentage of SA: 29.83%, A: 31.67%, N: 5.5%, D: 24.67% & SD: 8.33%.

CONCLUSION:

The Cooch Behar district, in the northern region of West Bengal, exemplifies a distinctive socio-cultural and educational milieu. Although most secondary schools in this district have used electronic tools to differing degrees, discrepancies persist regarding technological infrastructure, teacher training opportunities, and digital literacy. The capacity and inclination of educators to incorporate technology into classroom practices may vary due to factors such as age, experience, qualifications, resource availability, and institutional support. Comprehending the technical expertise and perspectives of secondary school educators in this district is crucial for pinpointing existing deficiencies, obstacles, and advantages. This inquiry is essential for enhancing teachers' professional competence and boosting the overall quality of educational delivery. A thorough analysis in this area can provide significant insights for policymakers, school administrators, teacher educators, and other stakeholders engaged in educational growth. The ongoing study of the technological knowledge and attitudes of secondary school teachers in the Cooch Behar district suggests a transitional phase in the educational system, characterized by the gradual integration of digital tools and pedagogical technologies into traditional classroom practices. The findings reveal that although many teachers have basic to intermediate technological expertise, substantial differences remain regarding digital competency, resource accessibility, and confidence in utilizing technology for instruction. Educators typically demonstrate a

favorable disposition towards the integration of technology, acknowledging its capacity to improve instructional efficacy, student involvement, and educational results. Insufficient institutional support, poor infrastructural resources, inconsistent training opportunities, and disparate levels of exposure to digital platforms frequently obstruct this favorable attitude. These disparities underscore the necessity for regular measures to close the digital divide in the district's educational framework. The report emphasizes that ongoing professional development, strategically designed ICT training programs, and enhanced infrastructure are essential for enabling instructors to effectively incorporate technology into their teaching methods. Collaboration among educational administrations, governmental entities, and teacher-training institutions is crucial for establishing a supportive ecosystem that fosters digital literacy and innovation. The conclusion indicates that secondary school educators in the Cooch Behar area of West Bengal often exhibit a moderate to favorable disposition towards technology, with a considerable segment demonstrating moderate sentiments. No substantial variation exists between genders, as both male and female educators exhibit analogous attitudes, and there is no notable distinction between rural and urban teachers concerning their perspectives on the utilization of technology such as ICT in education. The majority of educators exhibit a moderate disposition towards the utilization of ICT in education, whereas a lesser segment has a low disposition. The results indicate that although the overall disposition is mild, both male and female educators, as well as those in urban and rural settings, ought to get equivalent training and support to enhance their technology proficiency and attitudes on its application in the classroom. In conclusion, enhancing the technological preparedness of secondary school educators in the Cooch Behar district is essential not only for skill development but also for updating the educational landscape and guaranteeing quality education for future generations. By cultivating a culture of technological flexibility, reflective practice, and ongoing support, the district may progress towards a more inclusive, dynamic, and technology-enhanced educational system.

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