

ICT Competencies and Attitudes of Secondary-Level Social Science Teachers: Evidence from the Bijni Region of Assam

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Abstract:

Digital resources can make Social Science lessons more visual, exploratory, and connected to contemporary life, but their classroom value depends on what teachers can do with them and how teachers view their use. This descriptive survey examined the self-reported ICT competencies and attitudes of 33 secondary-level Social Science teachers in the Bijni area of Chirang district, Assam. The purposively selected participants completed a 40-item questionnaire containing 20 dichotomous competency statements and 20 five-point attitude statements. Responses were analysed through frequencies and percentages. Across 16 positively framed skill indicators, the average affirmative response was 76.89%. Teachers reported particular strength in copyright and fair-use awareness (87.88%), basic computer and internet operations (84.85%), video editing (84.85%), digital communication with students and parents (84.85%), word processing (81.82%), and online assessment (81.82%). Competence was less widespread for interactive timelines and simulations (66.67% each) and for presentation software, spreadsheets, and digital-content creation (69.70% each). Attitudes were generally favourable: 87.88% believed technology helped explain difficult topics, and 81.82% viewed ICT as essential to contemporary teaching and as a source of professional effectiveness. At the same time, about one-quarter of the participants reported some form of technology-related anxiety. The results suggest that professional development in this setting should concentrate on subject-specific applications, guided classroom practice, data protection, and dependable infrastructure rather than basic computer operation alone.

Keywords: ICT competency; teacher attitude; Social Science education; secondary school; digital pedagogy; Assam.

1. Introduction

Digital technologies have changed the everyday work of schools. Teachers now search for resources online, prepare multimedia material, communicate beyond the classroom, and use digital platforms for assessment. Yet the presence of a device or an internet connection does not, by itself, improve a lesson. Meaningful integration requires teachers to make informed choices about content, pedagogy, and technology. This relationship is central to the technological pedagogical content knowledge framework given by Mishra and Koehler (2006), which explains that why technical skill alone is insufficient for effective classroom use.

Social Science is well suited to this kind of purposeful use. A digital map can help students notice spatial relationships that are difficult to see in a printed diagram. Historical photographs, timelines, and virtual visits can bring distant places and periods into discussion. Simulations can give students a clearer sense of how civic institutions or economic choices operate. When such resources are connected to a definite learning purpose, they can improve access to information and encourage more active participation (Ghavifekr & Rosdy, 2015).

Whether these possibilities reach the classroom depends heavily on the teacher. Confidence, perceived usefulness, prior experience, and willingness to experiment often support adoption, while weak infrastructure, inadequate training, anxiety, and practical classroom difficulties can hold it back (Buabeng-Andoh, 2012; Pelgrum, 2001; Teo, 2008). These barriers are not interchangeable. A teacher may value ICT but lack the opportunity to practise with it, or may be technically capable but unconvinced that a particular tool improves learning.

Indian schools are increasingly expected to use technology to improve access, quality, and flexibility. The practical question is therefore no longer simply whether teachers use ICT, but how they use it and where they still need support. Familiarity with messaging, browsing, or document preparation may not translate automatically into the ability to design a map-based inquiry, construct an interactive historical timeline, or use a simulation to explore an economic problem. In Social Science, the distinction matters because technology is most useful when it supports inquiry, interpretation, visualization, and discussion rather than placing textbook content on a screen.

Against this background, the present study examines secondary Social Science teachers in the Bijni area of Chirang district, Assam. It considers two connected questions: which ICT tasks teachers believe they can perform and how they feel about using technology in their teaching. The local focus is deliberate. Opportunities for training, access to equipment, internet reliability, and professional support vary considerably between settings, so broad national claims may overlook the conditions under which teachers actually work.

2. Review of related Literature

Several strands of prior research inform this study. Pelgrum (2001) drew early attention to the digital divide in education, noting that unequal access to infrastructure remains one of the most persistent obstacles to ICT-based instruction, particularly in under-resourced schools. Kozma (2005) took a more optimistic view of the same period, arguing that ICT could support genuinely 2 creative teaching approaches and raise student engagement wherever it was properly integrated rather than

added on top of existing practice. Work specifically on teacher attitudes has generally converged on the finding that a positive disposition is a precondition, not a guarantee, of effective use. Sa'ari, Wong, and Roslan (2005), studying 160 Malaysian secondary teachers, found broadly positive attitudes toward IT paired with only moderate competency, and noted that more competent teachers also reported lower anxiety suggesting attitude and skill reinforce one another over time. Angadi (2012) reported a similar pattern among B.Ed. student-teachers in Karnataka: a favourable attitude toward ICT existed alongside gaps in the competence needed to use it across the full curriculum. Mishra and Koehler's (2006) Technological Pedagogical Content Knowledge (TPACK) framework offers a useful account of why this gap persists effective integration requires the intersection of subject knowledge, teaching method, and technical skill, and a shortfall in any one of the three limits what a teacher can actually do in the classroom. Studies conducted in less-resourced settings tell a comparable story. Danner and Pessu (2013), surveying teacher-trainees in Nigeria, found reasonable comfort with word processing and file handling but weak competence in presentation tools and email. Barfi (2015), working with basic school teachers in Ghana, reported a generally poor attitude toward teaching ICT despite moderate skill in core applications, attributing this partly to the absence of formal ICT training before entering the profession. Machmud, Rosidah, Fadhilatunnisa, and Fakhri (2021) found Indonesian teachers to be both competent and positively disposed toward ICT overall, yet still constrained by limited access, patchy connectivity, and a shortage of ideas for extending digital tools beyond routine use. Farisa, Sunggingwati, and Susilo (2023), studying English teachers in an Indonesian secondary school, likewise found considerable variation in competence even where student attitudes toward ICT were uniformly positive, again pointing to competence, rather than attitude, as the more variable factor. A separate body of work has examined the effect of teacher attitude and competence on classroom outcomes rather than treating them as endpoints in themselves. Briones (2018), working with Physics teachers in the Philippines, found a moderate but significant relationship between ICT competency and student performance, alongside reports from teachers that ICT genuinely 3 improved understanding and motivation, provided infrastructure cooperated. Rajeswari and Amutha Sree (2017), surveying teacher educators in India, reported a significant positive relationship between teaching competence and attitude toward ICT, with those already using digital methods scoring higher on both measures a finding that supports treating the two constructs as mutually reinforcing rather than independent. More recent large-sample work, including a 2024 study of 680 in-service teachers in China reported in Heliyon, has continued to find that self efficacy and positive attitude are strong predictors of actual ICT use in the classroom. Taken together, this literature points to three things relevant to the present study. First, attitude toward ICT among teachers tends to be positive across very different national and institutional contexts, which makes attitude alone a weak predictor of who will and will not use technology effectively. Second, competence is uneven even among positively disposed teachers and tends to be strongest in general-purpose tools word processing, browsing, communication and weakest in subject-specific or creative applications such as simulations, timelines, and content

authoring. Third, very little of this research has been conducted specifically among Social Science teachers in Northeast India, a gap the present study addresses directly.

3. Rationale of the Study

Earlier studies show that approval of technology and competence in using it do not always develop at the same pace. Sa'ari et al. (2005), for example, reported positive attitudes alongside moderate competence. Related gaps have been observed among student-teachers in India (Angadi, 2012) and teacher-education students in Nigeria (Danner & Pessu, 2013). Research conducted in other school settings also points to the importance of access, training, confidence, technical support, and institutional conditions (Briones, 2018; Machmud et al., 2021; Salehi & Salehi, 2012).

Local studies are important because schools do not have the same digital facilities, training opportunities, or technical support. This study identifies the skills that teachers already have and the areas in which they need help. The results can help school leaders and teacher educators plan practical training that good for teachers' real classroom needs.

4. Objectives

- To examine teachers' self-reported competencies in using ICT for teaching Social Science at the secondary level.
- To examine teachers' attitudes toward the use of ICT in secondary Social Science teaching.

5. Methodology

5.1 Research design

The study used a descriptive survey design. It was carried out in the Bijni area of Chirang district, Assam, and included teachers who taught Social Science at the secondary level. A survey was suitable because the purpose was to describe the teachers' present skills and views without changing their classroom conditions.

5.2 Participants and sampling

The sample included 33 secondary Social Science teachers. They were selected purposively because they were directly involved in teaching the subject. The results describe this group only and cannot be taken as a picture of every teacher in Assam.

5.3 Instrument

The researcher collected the data through a structured questionnaire. In addition to demographic questions, it had two main sections. The first section contained 20 Yes/No statements about ICT skills. These statements covered basic computer use, office software, online resources, digital maps, virtual tours, timelines, online assessment, collaborative tools, simulations, content creation, cloud storage, communication, anxiety, and copyright. The second section contained 20 attitude statements. Teachers answered them on a five-point scale from Strongly Disagree to Strongly Agree. The research supervisor and subject experts checked the questionnaire to see whether the questions were clear and relevant to the objectives. Their suggestions were used to revise the wording before data collection. The study records what teachers said about their own skills; it did not test or observe those skills directly.

5.4 Data collection and analysis

The teachers were told that their answers would be used for academic research and kept confidential. The responses were analysed through frequency and percentage. A Yes answer to a positive skill statement was counted as reported competence. A Yes answer to an anxiety statement was counted as a concern. For the positive attitude statements, Strongly Agree and Agree were combined. For the negative statements, Disagree and Strongly Disagree were treated as favourable responses.

6. Analysis and Interpretation of Results

6.1 ICT competencies

Table 1 presents the teachers' reported ICT skills. The strongest results were found in common digital tasks. Twenty-nine teachers (87.88%) said that they understood copyright and fair use. Twenty eight (84.85%) said that they could perform basic computer and internet operations, edit short videos, and communicate digitally with students and parents. Twenty-seven (81.82%) could use word processors, judge online resources, and use online assessment platforms.

Table 1: Selected self-reported ICT competencies (N = 33)

Competency Statement	Yes, n	Yes (%)
Copyright and fair-use awareness	29	87.88
Basic computer and internet operations	28	84.85
Editing short educational videos	28	84.85
Digital communication with students/parents	28	84.85
Word processing for notes and questions	27	81.82
Finding and evaluating credible online resources	27	81.82
Online quizzes and assessment platforms	27	81.82
Cloud storage and file sharing	26	78.79
Virtual tours of historical/geographical sites	25	75.76
Digital maps and virtual globes	24	72.73
Collaborative tools for student projects	24	72.73
Presentation software	23	69.70
Spreadsheets for data analysis	23	69.70
Creating simple digital content	23	69.70
Interactive timelines for History	22	66.67
Simulations for Civics or Economics	22	66.67

The results show a clear gap between everyday computer use and subject-specific classroom use. Most teachers could browse the internet, prepare documents, communicate online, and conduct online quizzes. However, nearly one-third could not use presentations, spreadsheets, digital content tools, interactive timelines, or simulations. These skills are useful in Social Science. Timelines help students follow historical events, simulations help them understand civic and economic choices, and spreadsheets help them study population and economic data.

Some teachers were also uncomfortable with technology. Nine (27.27%) worried that they might not reach every student through digital communication. Ten (30.30%) hesitated because they feared making mistakes, and seven (21.21%) felt nervous or worried that technology could reduce teaching quality. The average across the four anxiety statements was 25.00%. These concerns may come from limited confidence, poor internet service, or unequal access to devices among students.

6.2 Attitudes toward ICT

Most teachers had a positive view of ICT (Table 2). The strongest response concerned difficult topics: 29 teachers (87.88%) agreed that technology made them easier to explain. Twenty-seven (81.82%) said that they tried to learn new applications. The same proportion believed that ICT supported achievement and curriculum goals, was important for modern teaching, and helped them become more effective teachers.

Most participants did not see ICT as a replacement for the teacher. They saw it as a tool for explaining ideas, gaining students' attention, assessing learning, and communicating. Only 69.70% agreed that computers had clear advantages over traditional instruction. This may mean that many teachers prefer to combine digital and traditional methods. Workshop attendance was also lower (60.61%) than the willingness to learn new applications (81.82%). Teachers may therefore be interested in training even when suitable workshops are not easily available.

Two practical worries remained. Ten teachers (30.30%) feared losing digital files, and 11 (33.33%) worried about damaging devices. Schools can address these concerns by teaching simple backup methods, explaining cloud storage, setting clear rules for shared equipment, and providing technical help.

Table 2: Selected favourable attitudes toward ICT (N = 33)

Attitude Statement	Favourable, N	Favourable (%)
Technology makes difficult topics easier to understand	29	87.88
Technology attracts students' attention	27	81.82
Tries to learn new technology applications	27	81.82
Believes ICT supports student achievement	27	81.82
Believes ICT supports curricular attainment	27	81.82
Regards ICT as essential to contemporary teaching	27	81.82
Follows developments in educational technology	27	81.82
Encourages colleagues to use technology	27	81.82
Feels empowered to teach more effectively through ICT	27	81.82
Regards technological knowledge as important	26	78.79

Believes ICT facilitates Social Science activities	26	78.79
Feels confident using ICT in Social Science classes	24	72.73
Believes ICT supports personalized learning	24	72.73
Discusses technology use with colleagues	24	72.73
Sees advantages over exclusively traditional instruction	23	69.70
Rejects the statement that technology wastes time	23	69.70
Attends technology-related workshops	20	60.61

7. Discussion

The teachers were more comfortable with tools that they used in daily life than with tools that required lesson design. Browsers, word processors, video applications, cloud services, and communication platforms were familiar to most of them. Interactive timelines and simulations were less familiar. Other studies have found a similar gap between basic computer skills and the ability to use technology effectively in teaching (Danner & Pessu, 2013; Machmud et al., 2021; Sa'ari et al., 2005).

The teachers' positive attitudes are encouraging. Earlier research shows that teachers are more willing to use technology when they find it useful and feel confident with it (Kilinc et al., 2016; Teo, 2008). In this study, many teachers believed that ICT improved explanation, student attention, curriculum delivery, and their own effectiveness. They also encouraged their colleagues. Schools can build on this by asking confident teachers to support colleagues who need more practice.

However, a positive attitude does not prove that ICT is being used effectively in the classroom. The teachers described their own ability, but the study did not observe their lessons or test their skills. It also did not compare their answers with student achievement. In addition, confidence cannot solve problems such as poor internet service or a shortage of devices. Pelgrum (2001) discussed both resource and teacher-related barriers, while Ertmer (1999) explained that barriers may come from school conditions as well as teachers' beliefs. Training and school support are therefore both necessary.

Training should be connected directly with Social Science lessons. For example, teachers could prepare a map-based Geography activity, build a History timeline, study census data in a spreadsheet, or use a simulation in Civics. They also need time to try these activities in class and discuss what worked. Training should include copyright, data safety, accessibility, and alternatives for students who have limited internet access.

8. Major Finding

➤ The average affirmative response across 16 positively framed competency indicators was 76.89%, indicating a generally sound foundation in ICT use.

- Routine operations were the strongest area. At least 81.82% reported competence in browsing, word processing, evaluating online resources, online assessment, video editing, and digital communication.
- Specialized classroom applications were less widely reported. Only 66.67% reported competence in interactive timelines and simulations, while 69.70% reported competence in presentations, spreadsheets, and digital-content creation.
- Technology-related anxiety was not dominant but remained relevant: the average incidence across four anxiety indicators was 25.00%.
- Attitudes were predominantly favourable. Between 78.79% and 87.88% endorsed the importance, explanatory value, curricular usefulness, and professional benefits of ICT.
- Formal workshop participation (60.61%) lagged behind teachers' stated willingness to learn new applications (81.82%).
- Data loss and damage to devices were practical concerns for approximately one-third of the participants.

9. Educational Implication

The results support several actions for schools, teacher-education institutions, and educational leaders:

- Organize subject-specific, hands-on training in digital maps, interactive timelines, simulations, spreadsheets, and locally adaptable content creation effectively;
- Establish peer mentoring or professional learning groups in which teachers demonstrate classroom applications and discuss difficulties;
- Provide dependable internet access, functional devices, technical assistance, and clear procedures for maintaining shared equipment;
- Train teachers in file organization, cloud backup, cyber safety, privacy, copyright, and responsible use of digital resources;
- Plan inclusive alternatives for learners who lack reliable devices or connectivity outside school; and
- Evaluate ICT initiatives through classroom observation and student learning evidence rather than relying only on self-reported confidence.

10. Limitation and Future Research

This study has several limitations. It included only 33 purposively selected teachers from one area, so the results cannot represent all Social Science teachers. The questionnaire measured what teachers believed they could do rather than what they demonstrated in practice. The study also did not examine student results or compare responses by age, experience, training, gender, or school type. Some percentages in the dissertation tables contain rounding or transcription differences. The original response sheet must therefore be checked before the paper is submitted.

Future research should include more teachers from several districts and should report the reliability of the questionnaire. It could compare rural and urban schools or study differences related to teaching experience, training, gender, and school type. Classroom observation and practical tasksn

would provide stronger evidence of teachers' actual skills. Further studies could also examine whether ICT training changes classroom practice and improves student learning.

11. Conclusion

The teachers in this study generally had a positive attitude towards ICT and could perform many basic digital tasks. They were most confident in communication, internet use, document preparation, online assessment, and copyright awareness. Their main difficulty was using technology for specific Social Science lessons. Interactive timelines, simulations, spreadsheets, presentations, and digital-content creation should therefore receive greater attention in future training.

Technology should not replace the teacher or ordinary classroom discussion. It should be used when it helps students see information clearly, ask questions, study evidence, or communicate ideas. With practical subject-based project, reliable tools, support from colleagues, and attention to data safety and equal access, these teachers can make better use of ICT in Social Science classrooms.

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