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Secondary School Teachers' Attitudes towards Smart Classroom Use in Relation to Technophobia

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Abstract

This study examined secondary school teachers' attitudes towards the use of smart classrooms during teaching and their relationship with technophobia. A descriptive survey design was adopted. The sample comprised 150 teachers selected purposively from 30 secondary schools affiliated with the Board of Secondary Education, Odisha, in Puri Sadar Block of Puri district. Data were collected through an attitude scale, a technophobia questionnaire, interviews, and classroom observations. Descriptive statistics and correlation analysis were used to organise and interpret the data. The findings indicate that 70% of the teachers expressed a positive attitude towards smart classrooms, while 20% were neutral and 10% expressed a negative attitude. Female teachers reported a somewhat higher positive attitude than male teachers. Differences across subject streams and teaching-experience groups were modest at the descriptive level. Fear of technology, lack of confidence, and concern that technology might replace traditional teaching were identified as relevant dimensions of technophobia. The reported correlation between technophobia and frequency of smart-classroom use was positive and statistically significant ($r_s = .60$, $p < .05$), whereas the relationship between technophobia and attitude towards smart classrooms was weak, negative, and not statistically significant ($r_s = -.25$, $p > .05$). The study highlights the need for sustained, practice-oriented professional development and reliable technical support to strengthen teachers' confidence and meaningful classroom use of technology.

Keywords: smart classroom; secondary school teachers; attitude; technophobia; educational technology; Odisha

1. Introduction

The integration of digital technology has altered the organisation of classroom teaching and expanded the range of resources available to teachers and learners. A smart classroom commonly combines digital projection, interactive displays, networked content, multimedia resources, and educational software to support explanation, demonstration, assessment, and learner participation. When used purposefully, these resources can make abstract concepts more visible, diversify instructional representation, and enable teachers to respond to different learning needs.

The availability of technology, however, does not guarantee meaningful pedagogical use. Teachers' beliefs about usefulness, ease of use, professional relevance, and personal competence influence whether a technological resource is accepted and incorporated into everyday teaching. Davis (1989) identified perceived usefulness and perceived ease of use as important determinants of technology acceptance.

Research on educational technology similarly shows that inadequate equipment, limited training, weak institutional support, and uncertainty about pedagogical value can restrict adoption (Al-Senaidi et al., 2009).

Technophobia refers to anxiety, fear, avoidance, or discomfort associated with using technological devices and systems. In school settings, it may be expressed as hesitation to operate digital equipment, dependence on technical personnel, fear of making errors in front of students, or preference for familiar teacher-centred methods. Such concerns can reduce experimentation and prevent available smart-classroom facilities from being fully used. Teachers therefore require not only access to devices but also confidence, pedagogical knowledge, and continuing support.

1.1 Context of the Study

Puri Sadar Block, located in the coastal district of Puri in Odisha, includes rural and semi-urban educational settings. Schools in the area operate within varied infrastructural and socio-economic conditions. Differences in connectivity, equipment maintenance, technical assistance, and professional-development opportunities may shape teachers' experiences of smart-classroom technology. Understanding teachers' attitudes and technophobia in this context is important because teachers are the principal agents who translate technological investment into classroom practice.

1.2 Rationale and Significance

The study is significant for school administrators, teacher educators, and policy makers. Evidence about teachers' attitudes can inform the planning of professional-development programmes, while evidence about technophobia can help institutions design supportive rather than purely equipment-centred interventions. Findings may also assist schools in identifying groups that require additional mentoring, hands-on practice, or technical support.

2. Conceptual and Theoretical Background

2.1 Meaning and Features of a Smart Classroom

A smart classroom is not defined merely by the presence of a computer or projector. It is an instructional environment in which appropriate digital resources are deliberately integrated with curriculum content, teaching methods, learner activities, assessment, and feedback. Its physical and technological components may include a computer or laptop, projector, interactive display, audio system, internet connectivity, digital learning materials, subject-specific applications, a learning-management platform, and facilities for storing or sharing instructional content. The educational value of these components arises only when they are aligned with clearly stated learning outcomes. A conventional lecture displayed on a screen does not automatically become smart teaching; meaningful integration requires interaction, visualisation, inquiry, collaboration, immediate feedback, or another pedagogical improvement that would be difficult to achieve through traditional methods alone.

Smart classrooms can support multiple forms of representation. A science teacher may demonstrate a process through animation or simulation; a geography teacher may use maps and satellite imagery; a language teacher may combine text, pronunciation, audio, and video; and a social-science teacher may present archival material, timelines, or interactive data. Digital quizzes can provide immediate evidence of understanding, while saved resources may help teachers revisit difficult concepts and support absent learners. At the same time, poorly selected content, excessive screen dependence, or weak classroom management can distract learners. Smart-classroom practice must therefore be guided by pedagogical purpose, age appropriateness, accessibility, and the teacher's professional judgement.

2.2 Teachers' Attitudes and Technology Acceptance

Attitude is a learned tendency to respond favourably or unfavourably to an object, idea, practice, or situation. In the present study, attitude towards smart classrooms refers to teachers' beliefs, feelings, and behavioural readiness concerning the use of technology during teaching. The cognitive component includes beliefs about usefulness, relevance, reliability, and effects on learning. The affective component includes interest, enjoyment, anxiety, confidence, or discomfort. The behavioural component includes willingness to learn, experiment, prepare digital lessons, and use the available facilities regularly. These dimensions are connected: a teacher who regards a system as useful and manageable is more likely to approach it confidently, while a teacher who anticipates difficulty may avoid it even when the equipment is available.

The Technology Acceptance Model provides a useful foundation for interpreting such responses. Davis (1989) proposed that perceived usefulness and perceived ease of use are central determinants of acceptance. In a school setting, perceived usefulness concerns whether the technology helps the teacher explain effectively, manage time, engage learners, assess understanding, or improve achievement. Perceived ease of use concerns whether the system is understandable, reliable, and manageable without excessive effort. These perceptions are shaped not only by personal ability but also by infrastructure, language of the software, quality of training, availability of relevant content, class size, technical support, and institutional expectations. Acceptance is thus both an individual and an organisational matter.

2.3 Technophobia in Educational Settings

Technophobia is often understood as persistent fear, anxiety, discomfort, resistance, or avoidance related to technology. It may be general, involving digital devices as a whole, or situational, appearing when a teacher must operate unfamiliar equipment under time pressure or in front of students and colleagues. Its manifestations include fear of damaging a device, worry about pressing the wrong command, embarrassment about seeking assistance, concern about losing control of the class, reluctance to modify established lesson plans, and suspicion that technology will weaken the human role of the teacher. Technophobia should not be treated as a personal defect. It frequently develops from limited exposure, inaccessible training, previous technical failure, insufficient institutional encouragement, or a mismatch between the technology and the user's actual teaching needs.

A distinction must also be made between reasonable caution and disabling fear. Teachers are justified in questioning unreliable infrastructure, unsuitable content, privacy risks, or technology that consumes instructional time without clear benefit. Critical evaluation is part of professional responsibility. Technophobia becomes educationally problematic when fear prevents a teacher from developing essential competence or from using a demonstrably useful resource. Supportive interventions should therefore combine technical knowledge with emotional reassurance and pedagogical relevance. Teachers need safe opportunities to practise, make mistakes, receive feedback, and observe successful classroom applications undertaken by trusted colleagues.

2.4 Factors Influencing Smart-Classroom Integration

The integration of smart-classroom technology is influenced by first-order and second-order conditions. First-order conditions are external: availability of equipment, electricity, connectivity, maintenance, timetabling, classroom security, digital content, and technical assistance. Second-order conditions are internal: teachers' beliefs, confidence, perceived competence, openness to change, and understanding of learner-centred pedagogy. A school may possess advanced equipment but experience low utilisation because teachers have not received adequate preparation. Conversely, motivated teachers may be unable

to sustain digital teaching when electricity, connectivity, or maintenance is unreliable. Effective implementation requires both sets of conditions to be addressed together.

Professional development is particularly important. Training is most effective when it is continuous, subject-specific, practice-oriented, and connected to teachers' existing curriculum responsibilities. Teachers benefit from designing an actual lesson, testing a digital resource, teaching it, reflecting on the experience, and revising the lesson with peer or mentor support. Short programmes that concentrate on buttons and menus may produce procedural familiarity without developing pedagogical integration. The TPACK perspective emphasises the interaction of technological, pedagogical, and content knowledge; teachers must understand not only how a tool works but why, when, and for which concept or learner it should be used (Chai et al., 2013).

2.5 Review of Related Literature

Research on technology integration repeatedly demonstrates that institutional investment and classroom utilisation do not automatically progress at the same rate. Cuban (2001) observed that computers may remain underused when innovations are introduced without sufficient attention to school organisation, teacher routines, and instructional culture. The continuing relevance of this argument is clear: purchasing equipment is visible and immediate, whereas changing pedagogy requires time, trust, professional learning, and sustained leadership. Studies of adoption have therefore moved beyond simple access measures to examine confidence, perceived value, organisational climate, technical support, and compatibility with teachers' work.

Al-Senaidi, Lin, and Poirot (2009) identified several barriers to the adoption of technology for teaching and learning, including insufficient equipment, institutional constraints, and beliefs about the educational value of technology. These barriers may operate differently across locations and groups, which supports the need for context-specific research. In rural and semi-urban schools, irregular connectivity, limited maintenance services, and unequal exposure to digital tools may intensify teacher anxiety. At the same time, teachers working in resource-constrained settings often develop adaptable practices and may respond positively when technology directly addresses a recognised classroom difficulty.

Beetham and Sharpe (2013) emphasised that digital technologies should be understood through pedagogy rather than as isolated innovations. The teacher remains central in selecting resources, sequencing learning, providing explanation, monitoring participation, and ensuring that technological activity produces educational understanding. Chai et al. (2013) similarly reviewed technological pedagogical content knowledge as an important framework for teacher preparation. Taken together, the literature indicates that favourable attitude, confidence, knowledge, access, and support are interdependent. The present study extends this line of inquiry to secondary school teachers in Puri Sadar Block by examining attitude alongside technophobia and selected demographic variables.

2.6 Research Gap

Much of the available literature discusses technology adoption in higher education, urban institutions, or broad national and international settings. Fewer studies focus specifically on secondary school teachers in the rural and semi-urban context of coastal Odisha. Local conditions matter because the meaning of ease of use, access, and support is shaped by school infrastructure and professional opportunities. Furthermore, attitude studies sometimes emphasise general computer use without examining the emotional barrier represented by technophobia. By relating smart-classroom attitude to technophobia, gender, subject stream, teaching experience, and reported frequency of use, the present investigation seeks to provide a more situated account of teachers' readiness.

3. Objectives of the Study

1. To study secondary school teachers' attitudes towards the use of smart classrooms during teaching.
2. To compare teachers' attitudes towards smart-classroom use with respect to gender.
3. To compare teachers' attitudes towards smart-classroom use with respect to subject stream.
4. To compare teachers' attitudes towards smart-classroom use with respect to teaching experience.
5. To assess the level and principal dimensions of technophobia among secondary school teachers.
6. To examine the relationship between technophobia, attitude towards smart classrooms, and frequency of smart-classroom use.

3.1 Operational Definitions

Smart classroom: For this investigation, a smart classroom refers to a teaching space in which digital equipment and resources—such as a computer, projector, interactive display, audio-visual material, internet-based content, or educational software—are used to support planned classroom instruction. The term relates to pedagogical use during teaching and does not imply that every participating school possessed the same equipment or level of connectivity.

Attitude towards smart classrooms: This refers to the direction and intensity of teachers' beliefs, feelings, and readiness to use smart-classroom facilities. It includes perceived usefulness, comfort, interest, willingness to learn, and intention to integrate digital resources into lessons. In the reported analysis, responses were grouped as positive, neutral, or negative according to the scoring procedure adopted by the researcher. The final submission should state the exact score boundaries used to form these categories.

Technophobia: In this study, technophobia denotes apprehension, lack of confidence, discomfort, resistance, or fear experienced in relation to technological equipment and digital teaching processes. It includes concern about operating devices, making mistakes, adapting traditional teaching practices, or becoming dependent on technology. The operational meaning must be aligned with the items and scoring direction of the instrument actually administered.

Secondary school teacher: The term refers to a teacher serving at the secondary stage in a school affiliated with the Board of Secondary Education, Odisha, and included in the selected schools of Puri Sadar Block. Subject stream refers to the broad Arts or Science grouping reported by the researcher, while teaching experience refers to completed years of professional teaching classified as less than five years, five to ten years, or more than ten years.

3.2 Research Questions

1. What is the overall attitude of secondary school teachers towards the use of smart classrooms during teaching?
2. How do the descriptive attitude patterns vary according to gender, subject stream, and teaching experience?
3. Which dimensions of technophobia are most prominent among the participating teachers?
4. What relationships exist between technophobia, attitude towards smart classrooms, and frequency of smart-classroom use?

4. Methodology

Research design: A descriptive survey design was employed to obtain information about teachers' attitudes and technophobia within the natural school setting.

Population and setting: The study concerned secondary school teachers working in schools affiliated with the Board of Secondary Education, Odisha, in Puri Sadar Block, Puri district.

Sample: The sample consisted of 150 teachers drawn from 30 secondary schools. Purposive sampling was used to ensure representation by gender, subject stream, and teaching experience. The internally consistent cross-classification supplied for the study was 30 male Arts teachers, 30 male Science teachers, 70 female Arts teachers, and 20 female Science teachers.

Tools: Data were collected using a researcher-developed attitude scale, a technophobia questionnaire, interviews, and classroom observations. Before publication, the author should report the number of items, response format, score range, validity procedure, reliability coefficient, and interpretation criteria for each scale.

Data analysis: Frequencies, percentages, mean scores, and Spearman's rank-order correlation were used. The supplied material mentioned t-tests and analysis of variance; however, no test statistics, degrees of freedom, group means, standard deviations, or exact significance values were available. Consequently, no unsupported inferential results have been introduced in this article.

Delimitations: The investigation was restricted to 30 BSE Odisha-affiliated secondary schools in Puri Sadar Block, a sample of 150 teachers, and the variables of attitude, technophobia, gender, subject stream, and teaching experience.

Procedure of data collection: Permission was obtained from the appropriate school authorities before approaching participants. The purpose of the investigation was explained, and teachers were informed that the information would be used for academic purposes. The attitude scale and technophobia questionnaire were administered under comparable conditions. Interviews and observations were used to obtain contextual understanding of teachers' experiences with smart-classroom facilities. Completed responses were scrutinised, coded, and organised in a master sheet before statistical analysis. Identifying information should be excluded from the reporting dataset so that individual participants and schools cannot be recognised.

Scoring and interpretation: Responses to attitude statements were scored consistently, with reverse scoring applied to negatively worded items where necessary.

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5. Results and Interpretation

Table 1. Demographic profile of the participants

Variable	Category	Frequency	Percentage
Gender	Male	60	40.00
	Female	90	60.00
Subject stream	Arts	100	66.67
	Science	50	33.33
Teaching experience	Less than 5 years	40	26.67
	5–10 years	60	40.00
	More than 10 years	50	33.33

Table 1 shows that female teachers constituted 60% of the sample and male teachers 40%. Two-thirds of the participants belonged to the Arts stream. The largest experience group comprised teachers with 5–10 years of service (40%).

Table 2. Distribution by gender and subject stream

Gender	Arts, n (%)	Science, n (%)	Total, n (%)
Male	30 (20.00)	30 (20.00)	60 (40.00)
Female	70 (46.67)	20 (13.33)	90 (60.00)
Total	100 (66.67)	50 (33.33)	150 (100.00)

Source:

The cross-classification in Table 2 reconciles the marginal totals reported for gender and stream. Female Arts teachers formed the largest subgroup (46.67%), while female Science teachers formed the smallest subgroup (13.33%).

Table 3. Attitude towards smart classrooms by gender

Gender	Positive (%)	Neutral (%)	Negative (%)
Male	65	25	10
Female	75	15	10
Overall	70	20	10

Overall, seven out of ten teachers reported a positive attitude towards smart classrooms. The positive-attitude percentage was 10 percentage points higher among female teachers than among male teachers.

Table 4. Attitude towards smart classrooms by subject stream

Subject stream	Positive (%)	Neutral (%)	Negative (%)
Arts	72	18	10
Science	68	22	10

Positive attitudes were reported by 72% of Arts teachers and 68% of Science teachers.

Table 5. Attitude towards smart classrooms by teaching experience

Teaching experience	Positive (%)	Neutral (%)	Negative (%)
Less than 5 years	68	22	10
5–10 years	72	18	10
More than 10 years	75	15	10

The proportion reporting a positive attitude increased across the three experience groups, from 68% among teachers with less than five years of experience to 75% among teachers with more than ten years.

Table 6. Reported technophobia-factor mean scores

Technophobia factor	Mean score
Fear of technology	3.50
Lack of confidence in using technology	4.20
Concern about replacement of traditional methods	3.00

Lack of confidence in using technology recorded the highest reported mean score (M = 4.20), followed by fear of technology (M = 3.50).

Table 7. Correlation of technophobia with smart-classroom variables

Variables correlated	Spearman r_s	p value	Interpretation
Technophobia and frequency of smart-classroom use	.60	< .05	Positive; statistically significant
Technophobia and attitude towards smart classrooms	−.25	> .05	Weak negative; not statistically significant

The reported relationship between technophobia and frequency of smart-classroom use was positive and statistically significant ($r_s = .60$, $p < .05$). The relationship between technophobia and attitude was weakly negative and not statistically significant ($r_s = -.25$, $p > .05$).

6. Discussion

The predominance of positive attitudes suggests that teachers generally recognise the instructional value of smart classrooms. This finding is compatible with technology-acceptance research, which emphasises usefulness and ease of use as important influences on acceptance (Davis, 1989). Nevertheless, the neutral and negative responses indicate that access alone does not remove uncertainty or discomfort.

The highest technophobia-factor score concerned lack of confidence. This has practical importance: confidence can be strengthened through repeated hands-on practice, peer mentoring, on-site troubleshooting, and training connected to actual lesson planning. One-time demonstrations are less likely to produce sustained classroom integration when teachers continue to face equipment or support barriers. Al-Senaidi et al. (2009) similarly identified equipment, institutional support, and teacher beliefs as barriers to educational technology adoption.

The overall pattern also demonstrates why teacher attitude should not be reduced to a simple division between supporters and opponents of technology. A teacher may believe that smart classrooms benefit learners but still feel anxious about operating equipment. Another may be technically confident but unconvinced that the available digital material suits the syllabus. A third may use the classroom regularly

because of institutional expectations while continuing to experience discomfort. Attitude, competence, opportunity,

The descriptive increase in positive attitude across experience groups is noteworthy. It challenges the common assumption that longer-serving teachers are necessarily more resistant to technology. Experienced teachers may possess strong classroom-management skills, deep curriculum knowledge, and a clearer understanding of where visual or interactive resources add value. When adequate support is available, these professional strengths can facilitate integration. Less-experienced teachers may have greater everyday familiarity with digital devices but may still need help connecting technology with curriculum sequencing and assessment. Professional learning should therefore be differentiated according to need, not based on stereotypes about age or service length.

The modest difference between Arts and Science teachers is seen in using technology. Science subjects are often assumed to benefit more directly from simulations, animations, and visual demonstrations; however, Arts subjects can use maps, archives, documentaries, language resources, timelines, and interactive texts. The usefulness of a smart classroom depends on the availability and quality of subject-relevant content. A school-wide programme should therefore avoid concentrating equipment or training within only one stream. Teachers from different subjects should be encouraged to develop and exchange examples of effective digital lessons.

From an institutional perspective, the findings support a shift from technology provision to technology enablement. Provision asks whether equipment has been purchased and installed. Enablement asks whether teachers can access it at the required time, whether it functions reliably, whether suitable content is available, whether assistance can be obtained promptly, and whether teachers have time to prepare. Monitoring should include utilisation and learning quality without creating punitive pressure. Recognition of small successes, peer demonstration, and collaborative planning can build a school culture in which experimentation is professionally safe.

7. Educational Implications and Recommendations

- Professional development should be continuous, practical, and linked to subject-specific classroom activities.
- Schools should provide accessible technical assistance and routine maintenance so that equipment failure does not reinforce anxiety.
- Peer mentoring may help teachers learn in a supportive environment and reduce fear of making mistakes.
- Training should integrate technological, pedagogical, and content knowledge instead of focusing only on device operation.
- Administrators should periodically assess both actual use and teacher confidence, then provide targeted support.

At the policy level, resource allocation should include maintenance, replacement, connectivity, content licensing, and teacher support rather than treating the initial purchase as the complete cost of implementation. At the school level, a simple smart-classroom plan may identify responsible staff, booking arrangements, maintenance reporting, priority curriculum uses, and a schedule for peer-learning sessions. At the teacher-education level, prospective and serving teachers should experience technology as learners, designers, and reflective practitioners. Assessment of training should examine lesson quality and classroom application, not merely attendance or completion.

A staged confidence-building approach is recommended for teachers who experience technophobia. The first stage may involve basic operation in a small peer group; the second may involve adapting an existing lesson; the third may involve co-teaching or mentor-supported use; and the fourth may involve independent teaching followed by reflection. This progression normalises difficulty and allows competence to develop through successful experience. Help materials should use clear language and locally relevant examples, while support should be available at the moment of classroom need.

Conclusion

Secondary school teachers in the selected schools generally demonstrated favourable attitudes towards smart classrooms, but confidence-related concerns remained important. The descriptive findings suggest relatively small differences across gender, subject stream, and teaching experience. Technophobia and smart-classroom use appear to be related, although the scoring direction of the technophobia measure must be verified. Effective integration therefore requires a balanced approach that combines infrastructure with professional learning, technical support, appropriate digital content, and opportunities for teachers to practise technology-enabled pedagogy. Smart classrooms should strengthen—not replace—the teacher's professional role. Their success must ultimately be judged by the quality, inclusiveness, and meaningfulness of learning that they help teachers create.

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