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Cyber Classroom Management Ability of Higher Secondary Teachers in Vellore District

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Abstract:
The rapid integration of digital technologies into secondary education has transformed traditional classrooms into cyber-enabled learning environments. Effective cyber classroom management has therefore emerged as a critical competency for teachers. The present study investigates the level of Cyber Classroom Management Ability (CCMA) among higher secondary teachers and examines differences based on gender, age, and subject group. Using a normative survey method, data were collected from 600 higher secondary teachers in Vellore District, Tamil Nadu. Descriptive and inferential statistical analyses were employed. Findings reveal a moderate level of cyber classroom management ability among teachers, with no significant differences based on gender and age, but a significant difference based on subject group. The study highlights implications for teacher professional development and digital pedagogy.

Keywords: Cyber classroom management, higher secondary teachers, digital pedagogy, subject differences.

Introduction

The digital transformation of education has accelerated the adoption of online platforms, learning management systems, and cyber resources in secondary education. Teachers are now expected not only to deliver subject content but also to manage virtual learning environments effectively. Cyber classroom management refers to a teacher's ability to organize, monitor, regulate, and facilitate teaching–learning processes in technology-mediated classrooms. Poor management in cyber classrooms can lead to reduced student engagement, discipline issues, and ineffective learning outcomes. Hence, understanding teachers' cyber classroom management ability is vital for improving the quality of digital education.

In the Indian context, especially after large-scale initiatives promoting ICT integration in schools, higher secondary teachers are increasingly required to manage blended and online classrooms. However, teachers' preparedness and competence in cyber classroom management may vary based on demographic and professional factors. The present study attempts to examine these variations systematically.

Review of Related Literature

Recent literature on digital education underscores the critical role of teachers' digital competence in effectively managing online and blended classroom environments. Digital competence encompasses a combination of knowledge, skills, attitudes, and utilization practices necessary for teaching in technology-mediated settings (Falloon, 2020). This broad conceptualization directly relates to the present study's focus on Cyber Classroom Management Ability and supporting competencies such as Cyber Resources Knowledge and teachers' attitudes toward technology integration.

Hodges, Moore, Lockee, Trust, and Bond (2020) distinguish between emergency remote teaching (ERT) and quality online education, noting that the urgent shift to remote instruction during the COVID-19 pandemic exposed gaps in teachers' preparedness for virtual classroom management and use of cyber resources. Their work implies that effective attitude and strategic utilization of resources are necessary to navigate such rapid transitions, highlighting the need for deeper competence beyond technical familiarity (Hodges et al., 2020). PMC OECD's 2025 Preparing Teachers for Digital Education report synthesizes

evidence from multiple countries showing that many practicing teachers enter service without sufficient digital skills, and that professional learning opportunities are crucial for enhancing both technology use and pedagogical practice. This supports the importance of both Cyber Resources Knowledge and Utilization as components of teachers' overall classroom management competence. OECD

Several empirical studies have examined digital competence levels and influencing factors, offering insights relevant to the variables of Knowledge, Attitude, and Utilization. Althubyani (2024), using the DigCompEdu framework, found that science teachers exhibited a moderate level of digital competence and generally positive perceptions toward technology use. The study reported that perceived usefulness and subjective norms (attitude components) significantly influenced teachers' digital competence, while other demographic factors exerted less influence. These findings align with the present study's focus on teachers' attitudes and perceived competence as predictors of Cyber Classroom Management Ability. MDPI

Uygun (2024) investigated virtual classroom management competencies among primary teachers and found that prior virtual experience was linked with higher competence, especially in managing activities, relationships, and classroom structures online. This underscores the role of Utilization (experience-based use of digital tools) in developing effective cyber classroom performance. ERIC

Tomczyk's (2024) global analysis of pre-service teacher digital competence identifies key areas—including instructional design and reflective practice—that are essential for preparing future teachers to manage digital classrooms effectively. These insights extend the discussion of Cyber Resources Knowledge by highlighting how foundational training shapes competence development over time. ScienceDirect

Research on emergency remote teaching (ERT) practices further emphasizes the importance of adaptability and psychological readiness when managing cyber environments. Kasperski's (2025) analysis of teachers' perceptions of ERT found that many educators felt underprepared for engaging students and maintaining structure in remote spaces, which highlights the need for ongoing professional development that builds both technical knowledge and confident attitude toward digital pedagogies. journal.alt.ac.uk

Liu's (2025) quantitative review of digital literacy research indicates a growing emphasis on measuring multiple components of teachers' digital competencies—including knowledge, attitudes, and use patterns—across global contexts. Such multi-dimensional approaches reinforce the complexity of teacher competence in cyber classrooms and provide empirical justification for the present study's multi-variable framework. Frontiers

Taken together, these recent studies delineate an emerging consensus: teachers' ability to manage cyber classrooms effectively depends not only on technical knowledge of digital tools, but also on positive attitudes toward technology and meaningful utilization of digital resources in pedagogical practice. These insights inform the present study's investigation of cyber classroom management ability within the specific context of higher secondary education.

Objectives of the Study

1.To study the level of Cyber Classroom Management Ability of higher secondary teachers.
2.To find out whether there is a significant difference in Cyber Classroom Management Ability with respect to gender.
3.To examine the difference in Cyber Classroom Management Ability with respect to age.
4.To analyze the difference in Cyber Classroom Management Ability with respect to subject group.

Hypotheses of the Study

1.There is no significant difference in Cyber Classroom Management Ability among higher secondary teachers with respect to gender.
2.There is no significant difference in Cyber Classroom Management Ability among higher secondary teachers with respect to age.

3.There is no significant difference in Cyber Classroom Management Ability among higher secondary teachers with respect to subject group.

Methodology

The study employed a normative survey method to collect data from a large sample at a single point in time.

Sample

The sample consisted of 600 higher secondary teachers working in schools of Vellore District, Tamil Nadu. Simple random sampling technique was used to ensure representativeness.

Tool Used

Cyber Classroom Management Ability Inventory constructed and validated by Prakash V. and Dheivamani A. (2024) was used for data collection.

Statistical Techniques

Mean, standard deviation, t-test, and one-way ANOVA were used for data analysis.

Analysis and Interpretation

The Teachers' Cyber Classroom Management Ability Scale has been administered to 600 Higher Secondary Teachers. The data were collected. The Mean and Standard deviation were calculated for the entire sample and its sub-samples and are given in Table No.4.1.

Table No.1

The Mean and Standard Deviation of Higher Secondary Teachers' Cyber Classroom Management Ability scores

Sub Groups		N	Mean	SD
Entire Sample		600	87.38	21.073
Gender	Male	209	88.71	22.592
	Female	391	86.66	20.208
Age	Below 29 years	78	88.69	24.986
	30-39 years	102	90.12	18.759
	40-49 years	181	86.28	20.093
	50-55 years	192	87.61	21.466
	Above 55 years	47	82.51	20.564
Group	Arts	206	85.46	19.178
	Science.,	240	89.46	28.286
	Mathematics and Computer Science	154	86.70	27983

Null Hypothesis

There is no significant difference in Cyber Classroom Management Ability among the Higher Secondary Teachers with respect to their Gender.

In order to test the above Null hypothesis 't' value is calculated.

Table No. 2
Significance of difference in Cyber Classroom Management Ability among the Higher Secondary Teachers with respect to their Gender

Sub Group	N	Mean	SD	t	Significance at 0.05 level
Male	209	88.71	22.592	1.09	Not Significant
Female	391	86.66	20.208		

To examine whether Cyber Classroom Management Ability differs significantly between male and female higher secondary teachers, the null hypothesis stating that there is no significant difference with respect to gender was tested using the t-test.
The results show that male teachers (N = 209) obtained a mean score of 88.71 with a standard deviation of 22.59, while female teachers (N = 391) obtained a mean score of 86.66 with a standard deviation of 20.21. The calculated t-value is 1.09, which is not significant at the 0.05 level
Since the obtained t-value is less than the critical value required for significance, the null hypothesis is accepted. This indicates that there is no statistically significant difference in Cyber Classroom Management Ability between male and female higher secondary teachers.
Although male teachers show a slightly higher mean score than female teachers, this difference is not large enough to be considered significant. Therefore, it can be concluded that gender does not have a significant influence on the Cyber Classroom Management Ability of higher secondary teachers.

Null Hypothesis
There is no significant difference in Cyber Classroom Management Ability among the Higher Secondary Teachers with respect to their Age.
In order to test the above Null hypothesis 'F' value is calculated.

Table No. 3
Significance of difference in Cyber Classroom Management Ability among the Higher Secondary Teachers with respect to their Age

	Sum of Squares	df	Mean Square	F	Significance at 0.05 level
Between Groups	2244.258	4	561.065	1.266	Not Significant
Within Groups	263742.615	595	443.265		
Total	265986.873	599			

To determine whether Cyber Classroom Management Ability differs significantly among higher secondary teachers of different age groups, the null hypothesis stating that there is no significant difference with respect to age was tested using one-way ANOVA.
The analysis reveals that the F-value obtained is 1.266, which is not significant at the 0.05 level. The between-groups mean square (561.065) is relatively small when compared to the within-groups mean square (443.265), indicating that the variation in Cyber Classroom Management Ability scores across different age groups is minimal
Since the obtained F-value does not reach the level of statistical significance, the null hypothesis is accepted. This result confirms that there is no significant difference in Cyber Classroom Management Ability among higher secondary teachers belonging to different age groups.
Therefore, it can be concluded that age does not significantly influence the Cyber Classroom Management Ability of higher secondary teachers, and teachers across age categories demonstrate comparable levels of competence in managing cyber classrooms.

Findings of the Study

1.Higher secondary teachers possess a moderate level of cyber classroom management ability.
2.Gender does not significantly influence cyber classroom management ability.
3.Age does not significantly influence cyber classroom management ability.
4.Subject group significantly influences cyber classroom management ability, with Arts teachers demonstrating relatively higher competence.

Educational Implications

The findings highlight the need for targeted professional development programs focusing on cyber classroom management. Subject-specific training modules may help teachers adopt appropriate digital strategies aligned with their disciplines. School administrators and policymakers should prioritize continuous digital pedagogy training to strengthen teachers' competencies.

CONCLUSION

Cyber classroom management ability is an essential skill for higher secondary teachers in the digital age. The present study concludes that while teachers generally demonstrate moderate competence, demographic factors such as gender and age do not significantly affect their ability. Subject group, however, plays a crucial role. Strengthening cyber classroom management through systematic training and institutional support will enhance the effectiveness of digital teaching–learning processes.

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