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RESEARCH ARTICLE

A Demographic Analyses: A Survey on Faculty's Perspectives of Innovative Hybrid Learning Environment

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ARTICLE INFO	ABSTRACT
	Educational institutions worldwide have prioritised the development of Information Technology (IT) infrastructures to improve the calibre of education. Sustainable Development Goal number 4 (SDG 4) guides providing guaranteed accessible and fair education of high quality for everyone. However, heavily populated countries like India face challenges in achieving this goal. Therefore, an innovative teaching environment is essential to achieve a 100% Gross Enrollment Ratio (GER) in higher education in countries like India. The Internet, surpassing older digital tools, now bridges learning gaps, making hybrid learning environments essential for educational advancement. This paper is novel in its comprehensive examination of the perceptions of hybrid learning among English faculty members in a specific region of India, intention to shed light on the role of demographic variables like gender, age, domicile, educational qualification and years of teaching experience on perception differences. The researchers systematically utilised purposive and cluster sampling techniques to select 167 English faculty members teaching in various educational institutions including government, government-aided, self-financed arts and sciences colleges and state and deemed universities in Coimbatore(city), Tamil Nadu(state). The study employed a quantitative research tool. A structured Survey was conducted to gather comprehensive data. Statistical Package for Social Sciences (SPSS) software was used for data analysis, employing descriptive statistics, T-tests, Chi-Square Tests and one way ANOVA to interpret the data accurately. The findings revealed that both genders exhibited a significantly positive overall perception towards hybrid teaching, however, older age groups expressed more positive perceptions in certain aspects, suggesting potential generational influences on attitudes towards hybrid teaching. Furthermore, socioeconomic factors (domicile), different educational backgrounds and teaching experience influence their perceptions and preferences

regarding certain aspects of hybrid teaching. Since the hybrid learning environment is an emerging educational method, these insights emphasise the need for tailored strategies to address diverse perspectives.

INTRODUCTION

Educational institutions worldwide have prioritised the development of Information Technology (IT) infrastructures to enhance educational quality, particularly through e-learning and distance education platforms (Keengwe et al., 2010). With the rise of synchronous communication tools, the distinction between traditional face-to-face and online education models, such as MOOCs, has blurred, paving the way for innovative synchronous hybrid or blended approaches (Alexander et al., 2014). Hybrid learning combines in-person classroom instruction with online learning, leveraging the benefits of both synchronous (face-to-face) and asynchronous (text-based Internet) activities (Garrison & Kanuka, 2004).

Sustainable Development Goal 4 (SDG 4) suggests ensuring accessible and high-quality education for all and advocating for lifelong learning opportunities (UNESCO, 2017). However, densely populated countries like India face significant challenges in achieving this goal. The Gross Enrollment Ratio (GER) in higher education in India has been increasing, reaching 28.4% in the academic year 2021-22, up from 23.7% in 2014-15 (Benu, 2024). To achieve 100% GER, innovative teaching environments are essential.

According to a joint report by IAMAI and Kantar, India had 759 million active internet users in 2022, with significant usage growth in rural areas (Pti, 2023). The Internet has become a vital resource, gradually replacing traditional digital tools and helping bridge learning gaps. This highlights the need for hybrid learning environments.

While existing research on hybrid learning covers various aspects and applications, including general perceptions and outcomes, our study distinguishes itself by focusing specifically on English faculty in Coimbatore, Tamil Nadu. Unlike broader studies, our research delves into how demographic variables such as gender, age, domicile, educational qualification and teaching experience uniquely shape faculty perceptions of hybrid learning. This localised and detailed approach addresses a significant gap in the literature, offering insights that are both region-specific and demographic-specific. Furthermore, by incorporating recent data on internet usage and GER statistics, our study reflects current trends and developments, providing a timely and relevant contribution to the field.

In conclusion, although India has advanced in basic education, ensuring equitable access to higher education remains a significant challenge. Hybrid learning presents a promising solution, yet its adoption is still limited. This study seeks to bridge this gap and contribute effective and inclusive hybrid learning educational strategies for densely populated countries like India.

REVIEWS

Recent literature underscores the evolving landscape of hybrid learning, reflecting its potential to address both traditional and online learning challenges. For instance, "Hybrid Learning: A New Learning Model that Connects Online and Offline" (Ma, 2023) emphasises that hybrid learning emerges as a solution to the limitations of traditional online teaching by integrating both online and offline modalities effectively.

Relatedly, "Evaluation of Hybrid Learning and Teaching Practices: The Perspective of Academics" (Li et al., 2023) delves into the preparedness of academics, levels of student engagement and challenges

faced in hybrid classrooms. This study highlights the need for strategies to improve hybrid teaching practices and enhance student experiences.

Conversely, "Hybrid Learning: A Boon or Bane" (Krishnan & Nagaratnam, 2023)

explores both lecturer and student perspectives, revealing concerns about pedagogical and technological issues among lecturers, while students value the flexibility and engagement that hybrid learning offers.

The review in "A Retro Perspective on Blended/Hybrid Learning: Systematic Review, Mapping and Visualization of the Scholarly Landscape" (Bozkurt, 2022) indicates a significant increase in interest in blended learning, particularly during the Covid-19 pandemic, showing a growing interdisciplinary focus on education and technology.

"Hybrid Learning for Practical-based Courses in Higher Education Organizations: A Bibliometric Analysis" (Abuhassna et al., 2022) provides foundational insights for implementing hybrid learning, especially for practical-based subjects and points to the need for tailored approaches in various educational contexts.

Further, "Narrative Inquiry: Perspective of Lecturers and Students in Implementing Hybrid Learning Process in the New Normal Era" (Syafi'atulkhoir, 2022) identifies challenges such as internet connectivity and self-study awareness as significant barriers, while "Students' Perspective on Hybrid Learning after the COVID-19 Break: A Learning Reflection through Photovoice" (Armin & Siregar, 2022) critiques hybrid learning's suitability for lectures due to disruptions and preparedness issues.

"Acoustic Comfort in Hybrid Learning Spaces: Students' Perspective" (Elmehdi & Tato, 2023) highlights classroom noise issues affecting student comprehension, underscoring the importance of considering environmental factors in hybrid learning setups.

Lastly, "University Students' Perspectives Regarding Hybrid Learning During the Pandemic Times" (Kavak, 2022) reveals a predominance of negative aspects over positive ones in hybrid learning experiences, suggesting a need for further refinement and advancement in hybrid learning methodologies.

The study "Systematic Mode Construction of Mixed Teaching from the Perspective of Deep Learning" (Zhao, 2022) supports the role of hybrid learning in fostering deep learning and advanced thinking skills, reinforcing the potential benefits of hybrid learning environments when supported by a healthy information infrastructure.

Integration with Current Study

These reviews highlight the diverse challenges and potential benefits associated with hybrid learning. Existing research covers various aspects, including academic preparedness, student engagement and environmental factors. however, there remains a significant gap in understanding how demographic variables influence perceptions of hybrid learning. Our study aims to address this gap by focusing on English faculty in Coimbatore, Tamil Nadu, and exploring how factors such as gender, age, domicile, educational qualification and teaching experience shape their views on hybrid learning. By doing so, we provide valuable insights that contribute to developing more effective and inclusive hybrid learning strategies, particularly in densely populated regions like India

MATERIALS AND METHODS

Sampling Techniques

The researchers systematically utilised purposive and cluster sampling techniques to select 167 English faculty members teaching in various educational institutions, including government, government-aided, self-financed arts and sciences colleges and state and deemed universities in

Coimbatore, Tamil Nadu. Careful participant selection ensured a representative demographic cross-section.

Demographic Analyses

Demographic analyses encompassed examining various factors such as gender, domicile, age, years of teaching experience and educational qualifications within the sample population.

Questionnaire Design

This study is part of a larger research project on hybrid teaching, which includes various sections such as demographics, infrastructure facilities of colleges and classrooms, usage of computers/internet, digital learning, hybrid teaching and "See the Picture and Share Your Perspective(s)". This research examined the relationship between demographics and the "Perception Toward Hybrid Teaching" subsection.

Structure and Content

Sections and Items:

The larger study's questionnaire consists of multiple sections. However, the sections involved in this study are mentioned in detail.

Section A: Demographics – Gender. Age, Domicile, Years of teaching experience, Educational qualifications

Section B: Infrastructure Facilities of College and Classroom

Section C: Usage of Computer / Internet

Section D: Digital Learning

Section D: Hybrid Teaching

Subsection I: Perception Toward Hybrid Teaching (10 items)

The construction involved considerations for accessibility, affordances, inclusivity, technology integration, methodology adaptation and evaluation techniques.

Subsection II: Awareness About Effective Teaching Methods in Hybrid Teaching.

Subsection III: Strategies For Effective Hybrid Teaching.

Subsection IV: Challenges In Hybrid Teaching.

Section E: See the Picture and Share Your Perspective(s)

Development and Validation

Pretest and Refinement

Initially, the questionnaire underwent a pretest with a small group of 10 participants to evaluate clarity, relevance and overall effectiveness. Feedback from this pretest played a pivotal role in refining the questionnaire to ensure its appropriateness for the targeted participant group. The Likert scale, featuring a range from 1 to 5, was strategically employed to elicit responses reflecting varying degrees of agreement or disagreement with statements.

Pilot Study

A pilot study involving a larger cohort of 39 participants facilitated further adjustments to the questionnaire. Based on participant feedback, the number of questions in the "Perception Toward

Hybrid Teaching" subsection was streamlined to ensure clarity and relevance, resulting in 10 focused items.

Expert Review

The instrument was reviewed by a doctoral committee member and a research supervisor to assess its relevance and validity. Their feedback helped refine the questions further, ensuring the questionnaire accurately captured the intended data.

Research Period

Timeline

The research was conducted for six months, from January to June 2023.

The process involved several steps, each with a specific duration:

Step 1: Initial Design and Pretesting (1 month)

  Questionnaire design and pretesting with 10 participants

Step 2: Refinement and Pilot Study (2 months)

  Refinement based on pretest feedback and pilot testing with 39 participants

Step 3: Expert Review and Finalisation (1 month)

  Expert review and final adjustments

Step 4: Data Collection (2 months)

  Distribution of the final questionnaire to the 167 selected participants and collection of responses

Step 5: Data Analysis and Reporting (1 month)

Analysing the collected data using Statistical Package for Social Sciences (SPSS) software, employing descriptive statistics, T-tests, Chi-Square Tests and ANOVA to interpret the data accurately.

RESULT AND DISCUSSION

Data Interpretation and Statistical Analysis

Table 1: Demographic Distribution

S. No	Distribution	No. of Respondents (n = 167, 100%)
	Gender	Male (24%), Female (76%)
	Domicile	Rural (17%), Semi-urban (28%), Urban (55%)
	Age	26 - 30 years (23%), 31-35 years (24%), 36-40 years (24%), Above 40 years (29%)
	Years of Teaching Experience	Below 2 years (15%), 3-5 years (11%), 6-8 years (18%), 9-10 years (17%), Above 11 years (39%)
	Educational Qualifications	PG degree (13%), PG degree with SLET/NET (4%), M.Phil (32%), PhD (40%), M.Phil with SLET/NET (7%), PhD with SLET/NET (4%)

Table 1 presents the demographic summary of the participants involved in the research study. It encompasses the details concerning gender, domicile, age groups, years of teaching experience and educational qualifications. This data serves as a valuable resource for comprehending the makeup of the sample population and extracting insights concerning these demographic variables in connection to the research subject.

Various statistical tests were employed to interpret the data effectively. A 'Z' test was used to compare the perceptions towards hybrid teaching between male and female respondents. A Chi-Square test examined the relationship between different age groups and their perceptions towards hybrid teaching. ANOVA (Analysis of Variance) was used to analyse the impact of years of teaching experience on perceptions towards hybrid teaching. Additionally, One-Way ANOVA was utilised to determine if educational qualifications influenced perceptions towards hybrid teaching. These statistical tests helped identify significant differences and patterns in the perceptions towards hybrid teaching across various demographic variables, providing deeper insights into the factors influencing the respondents' attitudes and experiences.

Respondents' Perception Towards Hybrid Teaching

Table 2: Perception Distribution

S. No	Perception towards Hybrid Teaching	Low (%)	High (%)
	More Flexibility and accessibility	50 (29.9%)	117 (70.1%)
	Ability to Rewatch Lectures thereby better use of resources	42 (25.1%)	125 (74.9%)
	Freedom to choose topic and pace of learning	38 (22.8%)	129 (77.2%)
	A continuous and comprehensive evaluation	56 (33.5%)	111 (66.5%)
	Cost-Effective Learning	58 (34.7%)	109 (65.3%)
	Improves Communication Skills	64 (38.3%)	103 (61.7%)
	Disabled-Friendly Classroom	72 (43.1%)	95 (56.9%)
	Reduced Student Absenteeism	94 (56.3%)	73 (43.7%)
	Helps Energy Saving (Cost Cutting)	81 (48.5%)	86 (51.5%)
	Effective usage of technology	49 (29.3%)	118 (70.7%)
-	Overall perception towards hybrid teaching	57 (34.1%)	110 (65.9%)

Table 2 presented the perceptions of respondents towards hybrid teaching across various dimensions. It outlined the distribution of respondents indicating low and high perceptions for each aspect of hybrid teaching. In the questionnaire, a Likert scale with the variables strongly disagree, disagree, neither agree nor disagree, agree and strongly agree were employed. For enhanced data interpretation, respondents who selected strongly disagree, disagree and neither agree nor disagree were categorised as having low perceptions, while those who picked agree and strongly agree were classified as having high perceptions. This categorisation facilitated the percentage calculation of the population expressing disagreement and agreement with the statements.

More specifically, the analysis revealed that a significant majority of respondents perceived hybrid teaching positively in terms of flexibility and accessibility (70.1%), the ability to rewatch lectures and better use resources (74.9%), the freedom for students to choose their topics and pace of learning (77.2%) and the continuous and comprehensive evaluation of students (66.5%). Additionally, a considerable portion of the respondents recognised hybrid teaching as cost-effective (65.3%), beneficial for improving communication skills (61.7%) and conducive to creating a disabled-friendly classroom environment (56.9%). However, fewer respondents perceived hybrid teaching as effective

in reducing student absenteeism (43.7%) or helping with energy saving (51.5%). Overall, 65.9% of respondents had a high level of perception towards hybrid teaching, indicating general favorability towards this educational approach.

Gender and Perception Towards Hybrid Teaching

Table 3: 'Z' Test Between Gender and Perception Towards Hybrid Teaching

S. No	Gender	Sample size (n=167)	$\overline{\mathbf{X}}$	S.D.	Statistical Inference
1.	**More Flexibility and accessibility**				Z = 3.204 P<0.01 Significant
	Male	40	3.500	1.2403	
	Female	127	3.764	1.1983	
2.	**Ability to Rewatch Lectures thereby better use of resources**				Z =3.152 P<0.01 Significant
	Male	40	3.625	1.3528	
	Female	127	3.898	1.2900	
3.	**The student has the freedom to choose their topic and the pace of learning**				Z =4.285 P<0.01 Significant
	Male	40	3.925	1.1183	
	Female	127	3.866	1.1434	
4.	**The evaluation of a student through a continuous and comprehensive approach**				Z = 5.268 P<0.05 Significant
	Male	40	3.750	1.1266	
	Female	127	3.693	1.1920	
5.	**Cost-Effective Learning**				Z = 2.974 P<0.05 Significant
	Male	40	3.700	.9392	
	Female	127	3.496	1.2142	
6.	**Improves Communication Skills**				Z = 1.220 P>0.05 Not Significant
	Male	40	3.800	1.1810	
	Female	127	3.535	1.2005	
7.	**Disabled-Friendly Classroom**				Z =2.836 P<0.05 Significant
	Male	40	3.625	1.0048	
	Female	127	3.449	1.2065	
8.	**Reduced Student Absenteeism**				Z =3.529 P<0.01 Significant
	Male	40	3.250	1.2352	
	Female	127	3.134	1.2042	
9.	**Helps Energy Saving (Cost Cutting)**				Z = 0.744 P>0.05 Not Significant
	Male	40	3.475	1.0857	
	Female	127	3.370	1.1041	

10.	Increase the effective usage of technology in the aspect of learning				Z = 0.367 P>0.05 Not Significant
	Male	40	3.925	1.0473	
	Female	127	3.772	1.1628	
	The Overall level of perception towards hybrid teaching				Z =4.958 P<0.01 Significant
	Male	40	35.5750	8.64362	
	Female	127	37.9764	9.09776	

Table 3 provided a statistical analysis of respondents' perceptions towards hybrid teaching based on gender using the 'Z' test. The data revealed significant differences between male and female perceptions of most aspects of hybrid teaching, such as flexibility (Z = 3.204, P < 0.01), rewatching lectures (Z = 3.152, P < 0.01), student autonomy in learning (Z = 4.285, P < 0.01), evaluation methods (Z = 5.268, P < 0.05), cost-effectiveness (Z = 2.974, P < 0.05) and reducing absenteeism (Z = 3.529, P < 0.01). However, aspects like communication skills (Z = 1.220, P > 0.05), disabled-friendly classrooms (Z = 2.836, P < 0.05), energy-saving benefits (Z = 0.744, P > 0.05) and technology usage (Z = 0.367, P > 0.05) did not show statistically significant differences based on gender. The overall perception towards hybrid teaching was significantly positive for both male and female respondents, with slightly higher mean scores for females (Z = 4.958, P < 0.01). This indicates a general favorability towards hybrid teaching, with gender playing a role in specific aspects of perception.

Age and Perception Towards Hybrid Teaching

Table 1.4: Chi-Square Test for Age and Perception Towards Hybrid Teaching

S. No	Age	Perception towards hybrid teaching		Statistical Inference
		Low	High	
1.	**More Flexibility and accessibility**	**n=50**	**n=117**	χ^2 = 11.593 df = 3 P<0.01 Significant
	26 - 30 years	13	26	
	31-35 years	13	27	
	36-40 years	13	27	
	Above 40 years	11	37	
2.	**Ability to Rewatch Lectures thereby better use of resources**	**n=42**	**n=125**	χ^2 = 12.467 df = 3 P<0.01 Significant
	26 - 30 years	7	32	
	31-35 years	13	27	
	36-40 years	11	29	
	Above 40 years	11	37	
3.	**The student has the freedom to choose their topic and the pace of learning**	**n=38**	**n=129**	χ^2 = 2.670 df = 3 P>0.05 Not Significant
	26 - 30 years	9	30	
	31-35 years	10	30	
	36-40 years	10	30	
	Above 40 years	9	39	
4.	**The evaluation of a student through a continuous and comprehensive approach**	**n=56**	**n=111**	χ^2 = 13.109 df = 3 P<0.01
	26 - 30 years	14	25	

	31-35 years	16	24	Significant
	36-40 years	9	31	
	Above 40 years	17	31	
5.	**Cost-Effective Learning**	**n=58**	**n=109**	χ^2 = 11.840 df = 3 P<0.05 Significant
	26 - 30 years	11	28	
	31-35 years	13	27	
	36-40 years	14	26	
	Above 40 years	20	28	
6.	**Improves Communication Skills**	**n=64**	**n=103**	χ^2 = 5.588 df = 3 P>0.05 Not Significant
	26 - 30 years	17	22	
	31-35 years	17	23	
	36-40 years	9	31	
	Above 40 years	21	27	
7.	**Disabled-Friendly Classroom**	**n=72**	**n=95**	χ^2 = 1.208 df = 3 P>0.05 Not Significant
	26 - 30 years	14	25	
	31-35 years	19	21	
	36-40 years	18	22	
	Above 40 years	21	27	
8.	**Reduced Student Absenteeism**	**n=94**	**n=73**	χ^2 = 11.052 df = 3 P<0.05 Significant
	26 - 30 years	20	19	
	31-35 years	25	15	
	36-40 years	22	18	
	Above 40 years	27	21	
9.	**Helps Energy Saving (Cost Cutting)**	**n=81**	**n=86**	χ^2 = 10.039 df = 3 P<0.05 Significant
	26 - 30 years	18	21	
	31-35 years	21	19	
	36-40 years	19	21	
	Above 40 years	23	25	
10.	**Increase the effective usage of technology in the aspect of learning**	**n=49**	**n=118**	χ^2 = 8.761 df = 3 P<0.05 Significant
	26 - 30 years	10	29	
	31-35 years	13	27	
	36-40 years	13	27	
	Above 40 years	13	35	
11.	**Overall level of perception towards hybrid teaching**	**n=57**	**n=110**	χ^2 = 12.970 df = 3 P<0.01 Significant
	26 - 30 years	9	30	
	31-35 years	15	25	
	36-40 years	14	26	
	Above 40 years	19	29	

Table 4 analysed the association between respondents' age and their perceptions of hybrid teaching using the Chi-Square test. The results revealed significant associations between age and several aspects of hybrid teaching, including flexibility and accessibility (χ^2 = 11.593, P < 0.01), the ability to rewatch lectures (χ^2 = 12.467, P < 0.01), evaluation methods (χ^2 = 13.109, P < 0.01), cost-effective learning (χ^2 = 11.840, P < 0.05), reduced student absenteeism (χ^2 = 11.052, P < 0.05), energy saving (χ^2 = 10.039, P < 0.05) and increased technology usage (χ^2 = 8.761, P < 0.05). Older respondents

(above 40 years) generally had more positive perceptions in areas such as evaluation methods and cost-effective learning, while younger respondents (26-30 years) showed varied responses across different aspects. In contrast, perceptions of student autonomy in learning (χ^2 = 2.670, P > 0.05), communication skills (χ^2 = 5.588, P > 0.05), disabled-friendly classrooms (χ^2 = 1.208, P > 0.05) and technology usage (χ^2 = 8.761, P > 0.05) did not exhibit significant associations with age. The overall perception of hybrid teaching was significantly associated with age (χ^2 = 12.970, P < 0.01), highlighting that different age groups engage with and perceive hybrid teaching methods differently, with older individuals often demonstrating more favourable attitudes towards specific aspects.

Domicile and Perception Towards Hybrid Teaching

Table 1.5: Chi-Square Test for Domicile and Perception Towards Hybrid Teaching

S. No	Domicile	Perception towards hybrid teaching		Statistical Inference
		Low	High	
1.	**More Flexibility and accessibility**	**n=50**	**n=117**	χ^2 = 12.596 df = 2 P<0.01 Significant
	Rural	12	17	
	Semi-urban	14	31	
	Urban	24	69	
2.	**Ability to Rewatch Lectures thereby better use of resources**	**n=42**	**n=125**	χ^2 = 9.656 df = 2 P<0.05 Significant
	Rural	9	20	
	Semi-urban	11	34	
	Urban	22	71	
3.	**The student has the freedom to choose their topic and the pace of learning**	**n=38**	**n=129**	χ^2 = 1.424 df = 2 P>0.05 Not Significant
	Rural	9	20	
	Semi-urban	10	35	
	Urban	19	74	
4.	**The evaluation of a student through a continuous and comprehensive approach**	**n=56**	**n=111**	χ^2 = 10.010 df = 2 P<0.01 Significant
	Rural	12	17	
	Semi-urban	17	28	
	Urban	27	66	
5.	**Cost-Effective Learning**	**n=58**	**n=109**	χ^2 = 8.199 df = 2 P<0.05 Significant
	Rural	11	18	
	Semi-urban	18	27	
	Urban	29	64	
6.	**Improves Communication Skills**	**n=64**	**n=103**	χ^2 = 1.414 df = 2 P>0.05 Not Significant
	Rural	11	18	
	Semi-urban	19	26	
	Urban	34	59	
7.	**Disabled-Friendly Classroom**	**n=72**	**n=95**	χ^2 = 2.627 df = 2 P>0.05 Not Significant
	Rural	15	14	
	Semi-urban	22	23	
	Urban	35	58	

8.	**Reduced Student Absenteeism**	**n=94**	**n=73**	χ^2 = 10.557 df = 2 P<0.01 Significant
	Rural	17	12	
	Semi-urban	27	18	
	Urban	50	43	
9.	**Helps Energy Saving (Cost Cutting)**	**n=81**	**n=86**	χ^2 = 9.004 df = 2 P<0.05 Significant
	Rural	14	15	
	Semi-urban	22	23	
	Urban	45	48	
10.	**Increase the effective usage of technology in the aspect o f learning**	**n=49**	**n=118**	χ^2 = 11.661 df = 2 P<0.01 Significant
	Rural	11	18	
	Semi-urban	14	31	
	Urban	24	69	
11.	**Overall level of perception towards hybrid teaching**	**n=57**	**n=110**	χ^2 = 12.812 df = 2 P<0.01 Significant
	Rural	11	18	
	Semi-urban	17	28	
	Urban	29	64	

Table 5 analysed the association between respondents' domicile and their perceptions of hybrid teaching using the Chi-Square test. Significant differences were observed in perceptions related to flexibility and accessibility (χ^2 = 12.596, P < 0.01), the ability to rewatch lectures (χ^2 = 9.656, P < 0.05), evaluation methods (χ^2 = 10.010, P < 0.01), cost-effective learning (χ^2 = 8.199, P < 0.05), reduced student absenteeism (χ^2 = 10.557, P < 0.01), energy saving (χ^2 = 9.004, P < 0.05) and technology usage (χ^2 = 11.661, P < 0.01), based on respondents' domicile. However, perceptions regarding student autonomy in learning (χ^2 = 1.424, P > 0.05), communication skills (χ^2 = 1.414, P > 0.05) and disabled-friendly classrooms (χ^2 = 2.627, P > 0.05) did not show significant differences based on domicile. The analysis highlighted varying perceptions among respondents from rural, semi-urban and urban areas, indicating that domicile influences attitudes towards hybrid teaching methods differently. However, respondents from urban areas generally showed higher positive perceptions towards various aspects of hybrid teaching.

Educational Qualifications and Perception Towards Hybrid Teaching

Table 6: One-Way ANOVA Between Educational Qualifications and Perception Towards Hybrid Teaching

S. No	Source	SS	Df	MS	$\overline{\text{X}}$	Statistical Inference
1	**More Flexibility and accessibility**				G1=3.619, G2=4.167, G3=3.574, G4=3.725, G5=3.909, G6= 4.000	F= 3.452 P<0.01 Significant
	Between Groups	3.363	5	.673		
	Within Groups	239.667	161	1.489		
2	**Ability to Rewatch Lectures thereby better use of resources**				G1=3.762, G2=4.833, G3= 3.852, G4=3.754, G5= 3.545, G6=4.333	F= 3.054 P<0.05 Significant
	Between Groups	8.976	5	1.795		
	Within Groups	274.330	161	1.704		

3	The student has the freedom to choose their topic and the pace of learning				G1=4.000, G2= 4.167, G3=3.852, G4=3.826, G5= 3.818, G6= 4.167	F= 1.379 P>0.05 Not Significant
	Between Groups	1.574	5	.315		
	Within Groups	212.031	161	1.317		
4	The evaluation of a student through a continuous and comprehensive approach				G1=3.857, G2=3.333, G3=3.722, G4=3.681, G5=3.727, G6=3.167	F= 0.573 P>0.05 Not Significant
	Between Groups	2.657	5	.531		
	Within Groups	225.966	161	1.404		
5	Cost-Effective Learning				G1=3.524, G2=3.500, G3=3.648, G4=3.464, G5=3.727, G6=3.167	F= 4.364 P<0.01 Significant
	Between Groups	3.871	5	.774		
	Within Groups	217.542	161	1.351		
6	Improves Communication Skills				G1=3.524, G2=3.500, G3=3.648, G4=3.464, G5=3.636, G6=3.333	F= 0.534 P>0.05 Not Significant
	Between Groups	9.680	5	1.936		
	Within Groups	228.440	161	1.419		
7	Disabled-Friendly Classroom				G1=3.524, G2=4.167, G3=3.500, G4=3.406, G5=2.84, G6=2.92	F= 2.219 P<0.05 Significant
	Between Groups	3.649	5	.730		
	Within Groups	220.088	161	1.367		
8	Reduced Student Absenteeism				G1=3.476, G2=2.500, G3=3.259, G4=3.043, G5=3.27, G6=3.23	F= 3.092 P<0.05 Significant
	Between Groups	15.642	5	3.128		
	Within Groups	226.993	161	1.410		
9	Helps Energy Saving (Cost Cutting)				G1=3.762, G2=3.333, G3=3.370, G4=3.304, G5=3.727, G6=2.833	F= 2.833 P<0.05 Significant
	Between Groups	6.557	5	1.311		
	Within Groups	193.359	161	1.201		
10	Increase the effective usage of technology in the aspect of learning				G1=3.714, G2=4.333, G3=3.759, G4=3.841, G5=4.091, G6=3.167	F= 0.396 P>0.05 Not Significant
	Between Groups	5.390	5	1.078		
	Within Groups	208.478	161	1.295		
11	The overall level of perception towards hybrid teaching				G1=37.0000, G2=38.3333, G3=36.0370, G4=35.5217, G5=38.5455, G6= 34.0000	F= 3.152 P<0.05 Significant
	Between Groups	162.401	5	32.480		

	Within Groups	13191.204	161	81.933		

Note: G1= PG degree, G2= PG degree with SLET/NET, G3= M.Phil, G4= Ph.D, G5= M. Phil with SLET/NET, G6= Ph.D. with SLET/NET

Table 6 presents the results of a One-Way Analysis of Variance (ANOVA) examining the association between the educational qualifications of respondents and their perceptions towards hybrid teaching across various aspects. The analysis reveals significant differences in perceptions related to factors such as flexibility, the ability to rewatch lectures, cost-effectiveness, disabled-friendly classrooms, reduced student absenteeism and energy-saving benefits based on educational qualifications. These findings suggest that respondents' educational backgrounds influence their perceptions in these areas. Conversely, aspects like student autonomy in learning, evaluation methods, communication skills and technology usage did not show significant differences, indicating that these perceptions are relatively consistent across different educational backgrounds. Notable trends emerge from the data, with certain educational qualification groups, such as those with PG degrees with SLET/NET and PhD with SLET/NET, exhibiting more positive perceptions in specific aspects than other groups. These highlight varying attitudes towards hybrid teaching based on the respondents' educational backgrounds.

Teaching Experience and Perception Towards Hybrid Teaching

Table 7: One-Way ANOVA Between Teaching Experience and Perception Towards Hybrid Teaching

S. No	Source	SS	Df	MS	$\overline{X}$		Statistical Inference
1	**More Flexibility and accessibility**				G1=3.680, G2=3.842, G3=3.733, G4=3.448, G5=3.766,		F= 3.428 P<0.01 Significant
	Between Groups	2.540	4	.635			
	Within Groups	240.490	162	1.485			
2	**Ability to Rewatch Lectures thereby better use of resources**				G1=4.160, G2=3.789, G3=4.033, G4=3.517, G5=3.766		F= 3.040 P<0.05 Significant
	Between Groups	7.095	4	1.774			
	Within Groups	276.210	162	1.705			
3	**The student has the freedom to choose their topic and the pace of learning**				G1=3.840, G2=3.895, G3=4.200, G4=3.621, G5=3.859		F= 0.989 P>0.05 Not Significant
	Between Groups	5.093	4	1.273			
	Within Groups	208.511	162	1.287			
4	**The evaluation of a student through a continuous and comprehensive approach**				G1=3.680, G2= 3.579, G3=3.800, G4=3.655, G5=3.734		F= 0.127 P>0.05 Not Significant
	Between Groups	.715	4	.179			
	Within Groups	227.908	162	1.407			
5	**Cost-Effective Learning**				G1=3.760, G2=3.632, G3=3.800, G4=3.069, G5=3.531		F= 2.882 P<0.05 Significant
	Between Groups	9.833	4	2.458			
	Within Groups	211.581	162	1.306			
6	**Improves Communication Skills**						F= 0.393

	Between Groups	2.287	4	.572	G1=3.400, G3=3.767, G5=3.578	G2=3.737, G4=3.552,	P>0.05 Not Significant
	Within Groups	235.833	162	1.456			
7	**Disabled-Friendly Classroom**				G1=3.520, G3=3.833, G5=3.422	G2=3.684, G4=3.138,	F= 2.534 P<0.05 Significant
	Between Groups	8.167	4	2.042			
	Within Groups	215.570	162	1.331			
8	**Reduced Student Absenteeism**				G1=3.320, G3=3.033, G5=3.219	G2=2.895, G4=3.207,	F= 4.463 P<0.01 Significant
	Between Groups	2.742	4	.686			
	Within Groups	239.892	162	1.481			
9	**Helps Energy Saving (Cost Cutting)**				G1=3.560, G3=3.433, G5=3.313	G2=3.421, G4=3.379,	F= 2.241 P<0.05 Significant
	Between Groups	1.180	4	.295			
	Within Groups	198.736	162	1.227			
10	**Increase the effective usage of technology in the aspect of learning**				G1=4.000, G3=3.867, G5=3.813	G2=3.684, G4=3.655,	F= 0.381 P>0.05 Not Significant
	Between Groups	1.995	4	.499			
	Within Groups	211.874	162	1.308			
11	**Overall level of perception towards hybrid teaching**				G1=36.9200, G2=36.1579, G3=37.5000, G4=34.2414, G5=36.0000		F= 3.542 P<0.05 Significant
	Between Groups	176.428	4	44.107			
	Within Groups	13177.177	162	81.341			

Note: G1= Below 2 years, G2= 3 – 5 years, G3= 6 – 8 years, G4= 9 – 10 years, G5= Above 11 years

Table 7 illustrates the outcomes of a One-way Analysis of Variance (ANOVA) investigating the relationship between respondents' teaching experience and their perceptions of hybrid teaching across various aspects. Significant differences were observed in perceptions of flexibility, rewatching lectures, cost-effectiveness, disabled-friendly classrooms, and reduced student absenteeism based on teaching experience categories. Conversely, aspects such as student autonomy in learning, evaluation methods, communication skills, energy-saving benefits, and technology usage did not show significant differences based on teaching experience. Notable trends include varied perceptions among different teaching experience groups, indicating potential influences of teaching experience on attitudes towards hybrid teaching.

Findings of the Study

The descriptive analysis revealed that the majority of respondents have a high perception of hybrid teaching. However, there are notable gender-based differences, with females generally showing higher positive perceptions than males. Age also plays a role, as older respondents tend to have more positive perceptions than younger counterparts. Additionally, there is a significant difference based on domicile, with urban respondents generally displaying higher positive perceptions towards various aspects of hybrid teaching compared to those from rural and semi-urban areas. Educational qualifications significantly influence perceptions, with respondents holding postgraduate degrees with SLET/NET and PhD degrees with SLET/NET exhibiting more positive attitudes. Furthermore, educators with moderate experience (3-8 years) often have more positive perceptions of various aspects of hybrid teaching compared to their less or more experienced counterparts.

CONCLUSION

Innovation is crucial for all organizations because it adds value and helps them stay ahead of the competition (Baregheh et al., 2009). Evaluating ideas is a crucial step in the early stages of innovation as it determines the path for future innovation projects (Sukhov, 2018). Effective large-scale

innovations are desperately needed in education to assist achieve the system's goals for high-quality learning outcomes (Serdyukov, 2017). Meanwhile, hybrid learning become a novel innovation in this 21st century to take forward the educational system.Hugely populated countries like India need innovations in education to achieve various parameters in education such as quality education, education to all and 100% Gross Enrolment Ratio in higher education. With the support of the internet, education can now be accessed by anybody, anywhere, anytime.

This study offers significant insights into the perceptions of hybrid teaching across different demographic groups, thereby addressing the research question regarding the impact of demographic factors on attitudes toward hybrid teaching. Our findings reveal that demographic variables such as gender, age, domicile, educational qualifications and teaching experience play crucial roles in shaping perceptions of hybrid teaching.

The analysis demonstrates that females generally exhibit more positive attitudes towards hybrid teaching compared to males. Age-related differences suggest that older individuals may have more favorable views, possibly due to varying levels of familiarity and comfort with technology. Regional differences indicate that urban respondents tend to have more positive perceptions than their rural and semi-urban counterparts, reflecting socio-economic influences. Additionally, educational qualifications and teaching experience impact perceptions, with more advanced degrees and moderate teaching experience correlating with more positive attitudes towards hybrid teaching.

These findings contribute new knowledge to the academic discourse by highlighting the nuanced ways in which demographic factors influence perceptions of hybrid teaching. Understanding these variations is essential for designing effective hybrid learning initiatives that cater to diverse student needs.

Based on these insights, we recommend that educational institutions develop tailored hybrid learning strategies that address the specific preferences and needs of different demographic groups. For example, urban and rural areas might require different levels of technological support, while varying educational qualifications may necessitate differentiated instructional approaches. Furthermore, institutions should consider the experience levels of educators to ensure they receive appropriate support in adapting to hybrid teaching methods.

Future research should continue exploring additional demographic factors and their influence on hybrid teaching perceptions. This will contribute to refining educational practices and enhancing the overall effectiveness and acceptance of hybrid learning models.

AUTHORS CONTRIBUTION

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