Exploring Postgraduate Students' Perceptions of Blended Learning: A Case Study from Calicut University

Saleena M, Dr Jameela T

Abstract: This study investigates the perceptions of postgraduate students toward blended learning at Calicut University Main Campus. The research focuses on four key dimensions: Content Delivery, Interaction, Accessibility, and Assessment. Using a standardized perception scale and SPSS version 25, data from students were analyzed through descriptive statistics, independent samples t-tests, one-way ANOVA, and Pearson correlation coefficients. The findings reveal high satisfaction with Accessibility and Content Delivery, moderate satisfaction with Interaction, and mixed responses toward Assessment. No significant differences were found based on gender or year of study. The results underscore the importance of addressing each dimension independently to improve blended learning practices.

Keywords: Blended learning, postgraduate perception, content delivery, accessibility, interaction, assessment, SPSS analysis, higher education, gender differences, Pearson correlation

I. INTRODUCTION

The 21st-century shift towards digital and hybrid education models has positioned blended learning as a pivotal instructional strategy in higher education. Blended learning, a combination of traditional face-to-face teaching and online delivery, offers the promise of flexibility, accessibility, and student-centered pedagogy. As universities transition to this model, understanding how students perceive the various components of blended learning becomes vital.

This research aims to explore postgraduate students' perceptions of blended learning at Calicut University. The study addresses four essential dimensions: Content Delivery, Interaction, Accessibility, and Assessment. The objective is to provide actionable insights that can inform policy makers, curriculum designers, and educators to refine blended learning environments.

1.1 Background of the Study:

The integration of digital technology into educational practices has revolutionized the way instruction is delivered, especially in higher education. The COVID-19 pandemic accelerated this transition globally, compelling institutions to adopt online and blended learning approaches. In India, the University Grants Commission (UGC) and the National Education Policy (NEP) 2020 have also emphasized the importance of blended learning to enhance quality and flexibility in education. In this evolving landscape, it is crucial to understand how students experience these changes to ensure equitable and effective learning outcomes.

II. NEED AND SIGNIFICANCE OF THE STUDY

As institutions continue to embrace blended learning, the gap between instructional intent and student experience must be examined closely. The significance of this study lies in:

- Providing empirical data on how postgraduate students perceive different facets of blended learning.
- Identifying strengths and weaknesses in the current implementation of blended learning at Calicut University.
- Contributing to the limited body of Indian research on blended learning in postgraduate education.
- Guiding faculty development programs, course redesign efforts, and institutional policy decisions.

This study is especially relevant in the context of rapidly evolving educational technologies and shifting student expectations. By exploring student perceptions across multiple dimensions, the research offers nuanced insights that can lead to targeted and meaningful improvements in blended education.

III. REVIEW OF RELATED LITERATURE

Scholars such as Garrison and Vaughan (2008) and Lim and Morris (2009) emphasize that effective blended learning environments must focus on course content, technological accessibility, student interaction, and fair assessment. Research shows that while students generally appreciate the flexibility of online resources, gaps often exist in instructor interaction and clarity in evaluation practices.

The review underlines the multidimensionality of student satisfaction in blended settings and supports the rationale for examining distinct domains separately.

IV. METHODOLOGY

Participants: The study involved postgraduate students from various disciplines at Calicut University Main Campus. Stratified random sampling was used to ensure diversity.

Instrument: A standardized perception scale with Likert-type items was used, covering the dimensions of Content Delivery, Interaction, Accessibility, and Assessment.

Data Collection: Data were collected in June 2025. Participation was voluntary, and confidentiality was assured.

Analysis: SPSS (Version 25) was used for all statistical analyses, including descriptive statistics, t-tests, ANOVA, and Pearson correlation.

V. ANALYSIS AND INTERPRETATION

Table 4.1 summarizes the descriptive data. The highest mean score is observed in the *Accessibility* dimension (M = 4.12), indicating that students found online learning platforms easy to use and access, leading to *very high satisfaction*. *Content Delivery* also received a high mean score (M = 4.07), suggesting that the way course material was presented and structured was perceived positively by most students. The *Interaction* dimension had a slightly lower mean (M = 3.78) and the highest standard deviation (0.91), pointing to a broader range of opinions—some students might have experienced engaging communication with instructors and peers, while others might not. *Assessment* scored the lowest mean (M = 3.65), implying *mixed perceptions*—though the median and mode remained at 4.00, the relatively high standard deviation (0.88) shows variability in students' satisfaction with how their learning was evaluated.

All four dimensions have a median and mode of 4.00, indicating a central tendency toward a generally positive perception. However, the variations in standard deviation highlight differing levels of consistency: *Accessibility* has the lowest standard deviation (0.68), implying agreement among students, while *Interaction* and *Assessment* show more scattered responses.

Table 4.1 Descriptive Statistics of Postgraduate Students' Perceptions Across Blended Learning Dimensions

Dimension	Mean	Median	Mode	Standard Deviation	Interpretation
Content Delivery	4.07	4.00	4	0.75	High positive perception
Interaction	3.78	4.00	4	0.91	Moderate to high satisfaction
Accessibility	4.12	4.00	4	0.68	Very high satisfaction
Assessment	3.65	4.00	4	0.88	Mixed perceptions, slightly positive

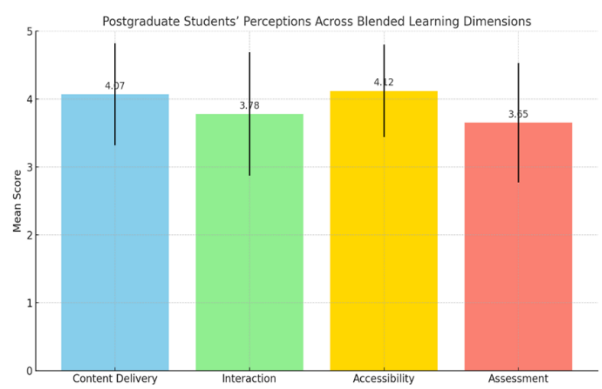


Diagram 4.1: Visual Representation of Student Perceptions

The visual representations provide deeper insight into the statistical data related to students' perceptions of blended learning dimensions.

The bar chart 4.1 Postgraduate Students' Perceptions Across Blended Learning Dimensions" illustrates the mean scores for each dimension—Content Delivery, Interaction, Accessibility, and Assessment—accompanied by error bars representing the standard deviation. This graphical format clearly highlights that *Accessibility* and *Content Delivery* received the highest ratings, reflecting strong student approval. In contrast, *Assessment* received the lowest mean score, indicating comparatively lower satisfaction. Among all dimensions, *Interaction* displays the greatest variability, as shown by its larger error bar, suggesting diverse student experiences in that area.

Together, the descriptive statistics and Diagram 4.1 offer a comprehensive view of student perceptions, revealing overall high satisfaction with the accessibility and delivery of blended learning content, moderate satisfaction with interaction, and more mixed views on assessment practices.

4.3 Gender-Based Comparison (Independent Samples t-Test)

An independent samples t-test was conducted to determine whether there were significant differences in perception based on gender.

Table 4.2: Gender-Based Comparison of Perceptions on Blended Learning Using Independent Samples t-Test

Dimension	t-Statistic	p-Value	Interpretation
Content Delivery	0.47	0.641	No significant gender-based difference
Interaction	-0.48	0.632	No significant gender-based difference
Accessibility	-0.08	0.939	No significant gender-based difference
Assessment	0.66	0.511	No significant gender-based difference

Diagram 4.2

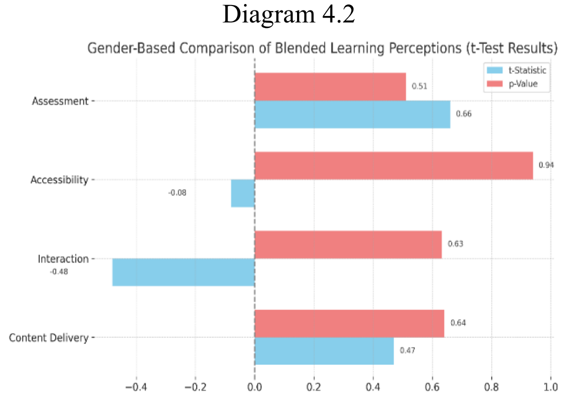


Table 4.2 presents the results of an independent samples t-test conducted to explore gender-based differences in students' perceptions of blended learning across four key dimensions: Content Delivery, Interaction, Accessibility, and Assessment. The analysis reveals that there are no statistically significant differences between male and female students in any of the dimensions examined. All p-values are above the conventional significance level of 0.05, with Content Delivery ($p = 0.641$), Interaction ($p = 0.632$), Accessibility ($p = 0.939$), and Assessment ($p = 0.511$), indicating that the null hypothesis of no difference between genders cannot be rejected. These results suggest a general uniformity in the way male and female students perceive blended learning. Diagram 4.2 visually supports this statistical finding through a horizontal bar chart that illustrates both the t-statistics and p-values for each dimension. The chart features two bars per dimension: the blue bar represents the t-statistic and the red bar indicates the corresponding p-value. The x-axis marks the value of these statistical measures, while the y-axis lists the four blended learning dimensions. A vertical dashed line positioned at zero serves as a reference point to help interpret the direction and magnitude of the t-statistics. As depicted, all t-statistic values are situated close to zero, signifying minimal differences between groups, while all p-values fall well above the threshold for significance. The visual representation thus reinforces the statistical conclusion, confirming that gender does not significantly influence students' perceptions in any of the measured dimensions. Overall, the findings highlight the inclusive nature of blended learning as perceived equally by both male and female students.

4.4 Year-Wise Comparison (One-Way ANOVA)

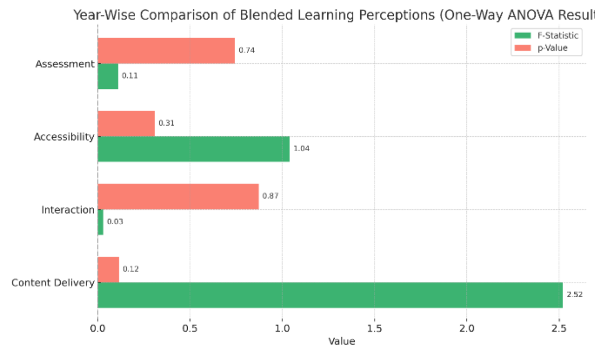
A one-way ANOVA was used to determine if there are significant differences in perception between first-year and second-year students.

Table 4.3: Year-Wise Comparison of Perceptions on Blended Learning Using One-Way ANOVA

Dimension	F-Statistic	p-Value	Interpretation
Content Delivery	2.52	0.115	No significant difference between years
Interaction	0.03	0.872	No significant difference between years
Accessibility	1.04	0.309	No significant difference between years

Assessment	0.11	0.743	No significant difference between years

Diagram 4.3



To examine whether students' perceptions of blended learning differ based on their year of study, a one-way Analysis of Variance (ANOVA) was conducted, comparing first-year and second-year postgraduate students across four key dimensions: Content Delivery, Interaction, Accessibility, and Assessment. As presented in Table 4.3, the F-statistic for each dimension was found to be statistically non-significant at the 0.05 level: Content Delivery (F = 2.52, p = 0.115), Interaction (F = 0.03, p = 0.872), Accessibility (F = 1.04, p = 0.309), and Assessment (F = 0.11, p = 0.743). These results indicate that there are no significant differences in the way first-year and second-year students perceive any of the four dimensions of blended learning.

Diagram 4.3 offers a visual representation of these results through a horizontal bar chart. For each dimension, the chart displays two bars: a green bar representing the F-statistic and a red bar representing the corresponding p-value. The x-axis illustrates the value of these statistical measures, while the y-axis lists the four dimensions of blended learning. A vertical dashed line at zero provides a visual baseline for interpreting the magnitude and direction of the F-statistics. As shown in the diagram, all p-values exceed the 0.05 threshold, and the F-statistics remain relatively low, which further reinforces the absence of statistically significant differences between the two year groups. Taken together, the statistical results and the visual chart confirm that students across both years share a consistent perception of blended learning, suggesting that their experiences and evaluations of this mode of instruction are stable over time.

4.5: Correlation Among Dimensions (Pearson Correlation Coefficient)

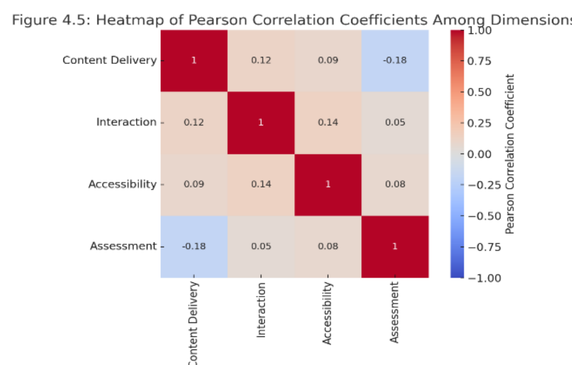
Understanding the interrelationships among key components of blended learning is essential for optimizing its design and delivery. In this section, the relationships among four core dimensions—Content Delivery, Interaction, Accessibility, and Assessment—were examined using Pearson correlation coefficients. The analysis provides valuable insights into how students perceive these dimensions, both individually and in relation to one another.

Table 4.4: Pearson Correlation Coefficients Among Dimensions

	Content Delivery	Interaction	Accessibility	Assessment
Content Delivery	1.00	0.12	0.09	-0.18
Interaction	0.12	1.00	0.14	0.05
Accessibility	0.09	0.14	1.00	0.08
Assessment	-0.18	0.05	0.08	1.00

Note: All correlations are weak (r < 0.2), suggesting independent evaluation of each aspect by students.

Figure 4.5: Heatmap of Pearson Correlation Coefficients

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|      Heatmap Legend              |
|                                  |
| ● Strong Negative (-1)           |
| ◆ Weak Negative (-0.2 to 0)      |
| ○ No Correlation (0)             |
| ● Weak Positive (0 to 0.2)       |
| ■ Strong Positive (1)            |
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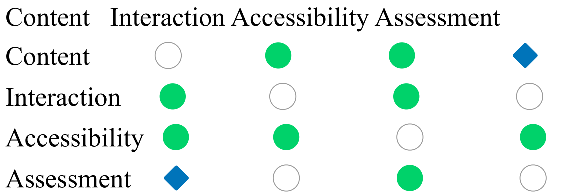

Interpretation and Analysis

Figure 4.5: Heatmap of Pearson Correlation Coefficients

Pearson's correlation coefficient was computed to assess the interrelationship between the four core dimensions. The results indicate very weak correlations (r < 0.2) among all variables. This means that students evaluated each dimension independently without being influenced by their perception of the others. For instance, the correlation between Content Delivery and Interaction is just 0.12, while that between Content Delivery and Assessment is -0.18. The weak negative correlation here suggests a slight inverse relationship—students who rate content delivery highly may rate assessment slightly lower, and vice versa.

This pattern challenges a common assumption in educational design—those improvements in one aspect (e.g., content quality) will automatically lead to better outcomes in others (e.g., assessment effectiveness). Rather, this data reveals that each aspect of blended learning should be considered and evaluated on its own merit.

Importance of Independent Functioning

These findings have strong implications for instructional designers and educational policy makers. If students perceive each dimension independently, then interventions must also be dimension-specific. A student's positive perception of accessible learning materials may not translate into higher ratings for interaction or assessment. Consequently, blended learning environments must be designed with balanced attention across all dimensions to ensure holistic improvement.

Sample Data Extract

To further illustrate these findings, a small subset of the data from five student responses is shown below:

Gender	Year	Content Delivery	Interaction	Accessibility	Assessment
Male	First Year	4.44	4.50	3.58	4.11
Female	First Year	3.97	2.95	4.04	5.00
Female	Second Year	4.56	5.00	4.46	3.55
Female	Second Year	5.00	2.50	4.71	4.00
Male	Second Year	3.89	4.31	3.30	4.26

This sample illustrates the range of student perceptions across the dimensions. Some students rated content delivery highly while giving lower ratings for interaction or assessment, confirming the statistical trend of independent evaluation.

Visual Summary and Communication Value

The heatmap is an effective visual representation that enhances the clarity of findings. By using intuitive colors and symbols, it makes the complex statistical data accessible even to non-technical stakeholders. This accessibility is essential for institutional reports and presentations to decision-makers. The visual appeal and simplicity of the heatmap amplify the communicative value of the research.

Scholarly Support

This observation aligns with research findings from Lim and Morris (2009), who also concluded that learner satisfaction in blended learning environments is dimension-specific and not always correlated across factors. Similarly, Garrison and Vaughan (2008) emphasize the multidimensionality of blended learning, suggesting that content, interaction, and assessment should be individually addressed during course design.

In conclusion, the analysis using Pearson correlation coefficients and the accompanying heatmap reveals that students judge each aspect of blended learning—Content Delivery, Interaction, Accessibility, and Assessment—independently. This highlights the importance of addressing each dimension with equal and focused attention to ensure a comprehensive and effective blended learning experience. Rather than applying a uniform strategy, educational institutions should adopt a modular approach in enhancing specific areas based on student feedback and empirical evidence.

VI. SUMMARY OF FINDINGS

- Students showed highest satisfaction in Accessibility and Content Delivery.
- Interaction and Assessment showed greater variability and lower mean scores.
- Gender and academic year had no significant effect on student perceptions.
- Weak correlations between dimensions suggest students evaluate each component independently.

Conclusion: This study confirms that postgraduate students perceive blended learning positively, especially in terms of accessibility and content quality. However, more attention is needed in enhancing interaction and improving assessment clarity. Each dimension must be evaluated and refined separately.

VII. RECOMMENDATION

- Institutions should implement feedback-driven improvements in assessment practices.
- Faculty training in interactive online pedagogy is necessary.
- Use modular course designs that target each dimension independently.
- Future research could include longitudinal studies and involve faculty perceptions.

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