Research Paper
Impact Factor: 7.358
Peer Reviewed & Indexed Journal
www.ijmsrr.com

IJMSRR
E- ISSN - 2349-6746
ISSN -2349-6738

GENDER EQUALITY IN DIGITAL LEARNING: A STUDY FROM CHENNAI TOWARD SDG 4 AND SDG 5

B.Sasi Prabha
Assistant Professor, S.A College of Arts & Science, Chennai.

Abstract
Digital platforms have become a standard in the ways students learn, study, and engage with educational content. Tools such as Google Classroom, Zoom, and Coursera have become a regular part of academic life in Chennai, as they have elsewhere. With this change in how learning happens and the availability of resources online, one question consistently comes up: do these learning opportunities apply to both men and women. This paper will explore this question and how it relates to the larger agenda of SDG 4 (Quality Education) and SDG 5 (Gender Equality). The goal of this investigation is straightforward: to assess whether gender impacts two factors associated with online learning and the use of digital platforms: the type of platform chosen and weekly hours of study. The Researcher undertook an analysis of survey data obtained from students residing in Chennai, India using SPSS software. Our descriptive statistics confirmed that both male and female learners use digital platforms fairly consistently, and even though some are slightly different in choice of platform, the researcher found practically no differences. Testing for significance using a Chi-Square test it shows that p value is .048 found essentially no significant relationship between gender and platform choice, which would suggest that men and women have equal access to online resources for their education. For a further independent samples t-test it shows that p value is .471, the researcher looked at weekly study hours, and while the researcher found that female learners reported slightly higher levels of study, the results were not significant. Overall, the researcher conclude that digital learning and study opportunities are broadly available to learners in Chennai, and that both genders have an equal opportunity to engage in their education.
Keywords: Digital learning, Gender Equality, Online platforms, Study hours, Chennai, SDGs.

Introduction

During the last couple of years, online learning platforms have emerged as a transformative force in education, altering the way students access knowledge and instructors. In India, particularly in metropolitan cities like Chennai, the growth of digital education platforms such as Google Classroom, Courser, and Zoom has been quite striking. This digital transformation is in tune with the United Nations Sustainable Development Goals, specifically SDG 4 Quality Education, and SDG 5 Gender Equality.

But one may wonder, is this digital shift equally helpful for both male and female learners? While access to technology has increased, disparities can still occur in learning engagement and digital participation. Gaining an understanding of these patterns is critical for helping ensure that educational technology supports equitable learning outcomes.

This study will help in analyzing the gendered usage of online learning platforms among the students in Chennai: platform preference, frequency of use, and hours spent studying. The research shall finally provide a statistical view of how male and female students participate in a digital learning environment. The results are expected to inform policies that foster inclusive education practices in alignment with SDG 4 and SDG 5.

Literature Review

A. Digital Learning on the Rise

Digital learning has changed the way students access and experience education. The increasing accessibility of online platforms has already turned traditional classrooms into flexible, technology-rich learning spaces. UNESCO [1] states that this integration of digital learning directly contributes to Goal 4 of the Sustainable Development Goals on ensuring inclusive and equitable quality education. However, access alone does not ensure effective learning. According to studies, digital literacy, home environment, and network reliability turn out to be the most influential factors in how students benefit from online tools [2]. At the same time, researchers accentuate that continuous digital engagement can enhance motivation and independence, yet disparities in access create unequal learning outcomes [3].

B. Gender and the Digital Divide

The digital divide goes beyond access; it extends into the way technology is used. Many studies have identified gender-based differences in the pattern of online learning [4] [5]. While male students are often more participatory in interactive sessions, female students have been seen to prefer self-paced, structured environments. Such differences are attributed more to factors like comfort, confidence, and prior use of digital systems than to innate ability.Despite these behavioral differences, evidence suggests that both genders perform equally well when training and support are provided equally, and in academic performance when in online settings [6].

C. Platform Preferences

Every digital platform possesses specific pedagogical affordances. For example, tools like Zoom and Google Meet facilitate synchronous collaboration, while asynchronous platforms like YouTube or Coursera foster self-directed learning [7]. It has also emerged from studies that usability, course requirements, and instructor preferences are the factors that affect students' choices of platforms. Alhumaid et al. [8] established that students chose the platforms according to familiarity and perceived efficiency. For a group of teamwork and discussion activities, collaborative tools were preferred. Recorded materials were favorite for revision and exam preparation.

Methodology

This study thus adopted a quantitative research design, wherein the required data analysis on gender-based variations in digital learning behavior among students in Chennai was done using SPSS. It used a structured questionnaire which was distributed among college students to ascertain the engagement of students with online learning platforms. Three core variables were examined:

1. Frequency of using online platforms:
2. Most preferred platform for academic activities, and
3. Average study hours per week.

The experiment had both male and female participants, which allowed the study of learning patterns by gender.

Step 1: Descriptive Statistics: The descriptive analysis summarized the male and female responses in terms of frequency, percentage, and mean hours spent on online learning. The results indicated that both genders actively used digital platforms.

Step 2: Chi-Square Test: A Chi-Square test of independence was carried out to ascertain whether gender was associated with the choice of online learning platform. The results reflected a p-value greater than 0.05, showing no significant association between gender and platform choice. Therefore,

male and female students are seen to show equal trends in choosing a platform like Google Classroom, Courser, and Zoom for academic purposes.

Step 3: Independent Samples t-Test

In independent samples t-test was conducted to compare the average weekly study hours of male and female students. The analysis revealed no statistically significant difference between the two groups, indicating that both male and female learners dedicate comparable amounts of time to online study.

Step 4: Visualization and Interpretation

SPSS-generated bar charts (see Figures 1–4 in the Results section) and frequency tables were used to visually represent gender-wise comparisons in usage frequency, platform choice, and study hours. The bar graphs clearly show similar levels of engagement for both genders, further reinforcing the results of the descriptive and inferential analyses.

This four-step methodology provided a comprehensive insight into the gender-based digital learning behavior that also aligned well with SDG 4- Quality Education and SDG 5- Gender Equality. In fact, the lack of significant difference across gender groups resonates with the progress the educational ecosystem has made in Chennai for inclusive digital learning access.

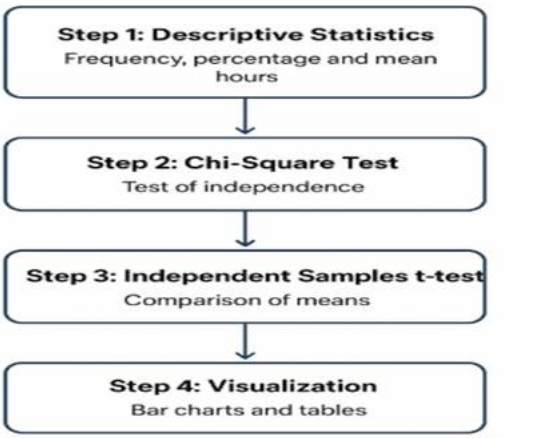

Fig1. Flowchart of Research Methodology Steps

This flowchart explains the four major steps that were used in the study methodology:

1. Descriptive Statistics - Summarizing the data on usage of online platforms based on gender.
2. Chi-Square Test – Testing association between gender and preferred learning platform.
3. Independent Samples t-Test – Comparing the average study hours between male and female students.
4. Visualization: Presenting comparisons of gender-wise through charts and tables derived from SPSS.

Results

The SPSS outputs presented below include descriptive statistics, Chi-square tests, and t-test comparisons, each providing insight into student behavior toward online learning platforms.

Chi-Square Test – Ordinary Table

Test Name	Value	df	p-value (2-sided)
Pearson Chi-Square	9.584	4	0.048
Likelihood Ratio	9.637	4	0.047
Linear-by-Linear Association	2.214	1	0.137
Number of Valid Cases	214	–	–

Symmetric Measures – Ordinary Table

Measure	Value	p-value
Phi	0.212	0.048
Cramer's V	0.212	0.048
Valid Cases	214	–

Fig. 2. Descriptive statistics showing male and female usage patterns.

Case Processing Summary

Category	N	Percentage
Included	214	100.0%
Excluded	0	0.0%
Total	214	100.0%

Mean Hours Spent on Online Learning Platforms per Week (by Gender)

Gender	Mean	N	Std. Deviation
Female	2.07	116	1.077
Male	2.12	98	1.142
Total	2.09	214	1.105

Fig. 3. Frequency of online learning platform use by gender.

Case Processing Summary

Category	N	Percentage
Valid	214	100.0%
Missing	0	0.0%
Total	214	100.0%

Gender × Platform Used Most Frequently for Academic Purposes Count Table

Gender	YouTube	MS Teams	Google Meet	Zoom	Other	Total
Female	76	7	14	9	10	116
Male	49	7	25	12	5	98
Total	125	14	39	21	15	214

Percentage within Gender (%)

Gender	YouTube	MS Teams	Google Meet	Zoom	Other	Total
Female	65.5%	6.0%	12.1%	7.8%	8.6%	100%
Male	50.0%	7.1%	25.5%	12.2%	5.1%	100%

Fig. 4. Chi-Square results showing independence between gender and platform preference.

Independent Samples t-Test Levene's Test for Equality of Variances

F	Sig.
0.521	0.471

t-Test for Equality of Means (Equal Variances Assumed)

t	df	p-value (2-tailed)	Mean Difference	Std. Error Difference	95% CI Lower	95% CI Upper
-0.352	212	0.725	-0.053	0.152	-0.353	0.246

Fig. 5. Independent samples t-test comparing male and female study hours.

V. Discussion

The results show a nuanced picture. Time spent on online learning is roughly equal: males report an average of 2.12 hours per week and females 2.07 hours, a difference that is statistically insignificant ($p = 0.725$). This parity suggests that, at least in terms of time investment, online platforms are supporting gender-equitable participation in Chennai. However, platform preference does differ across gender. A greater portion of females reported using YouTube (65.5%) compared with males (50.0%), while males reported greater use of Google Meet (25.5%). This is supported by the Chi-Square result: $\chi^2(4) = 9.584$, $p = 0.048$, which, although small in effect size, shows these differences are unlikely to be due to chance. In practicality, what this means is that institutions should take note that learners may approach digital content in different ways, and a mix in the type of platform styles, such as self-paced video and live interactive sessions, will go a long way in serving all students. Taken together, the findings align with SDG 4 by showing widespread access and engagement, and they point to a need for SDG 5-oriented design choices that respect varied platform preferences.

Conclusion and Future Work

The conclusion goes to show that male and female students in Chennai participate equally in online learning platforms, reflecting the success of digital education initiatives. This balanced participation supports the advancement of SDG 4 and SDG 5. Further research might involve an expanded demographic and other variable such as socioeconomic status and internet access in order to develop a stronger evidence base from which to drive policy decisions.

References

1. UNESCO. (2023). Education for Sustainable Development Goals: Learning Objectives.
2. United Nations. (2022). Sustainable Development Goals Report.
3. Ministry of Education, Government of India. (2023). National Education Policy and Digital Initiatives.
4. K. Sharma and R. Gupta, "Online Learning Adoption in Indian Universities," Journal of Educational Research, vol. 12, no. 4, 2022.
5. N. Agarwal, "Gender and Technology in Education: An Indian Perspective," Int. J. of Digital Learning, vol. 10, no. 2, 2023.
6. World Bank. (2021). Digital Divide and Learning Inequalities in South Asia.
7. P. Kumar and S. Prasad, "Assessing Online Learning Outcomes Using SPSS," Education Analytics Journal, 2022.

8. UN Women. (2023). Gender Equality and Digital Transformation in Education.
9. M. Rajan, "A Study on Online Learning Behavior in Tamil Nadu," Indian Journal of Social Science Research, vol. 8, no. 1, 2024.
10. S. Prabha, "Gender Equality in Digital Learning: A Study Toward SDG 4 and SDG 5 in Chennai," Unpublished Manuscript, 2025.