

The Digital Shift: Unpacking the Post-Pandemic Effect of Online Learning on School Students' Psychological Well-Being and Academic Performance

Yashpal Azad^{1*}, Nirmaljeet Kaur²

ABSTRACT

This study examined the impact of online education on the psychological well-being and academic performance of school students during the COVID-19 pandemic. It also investigated gender differences satisfaction of students with online learning. A total of N =120 school students (60 boys and 60 girls) of J.P.S. Academy and D.A.V. Public School, Assandh, Karnal district, Haryana were randomly selected to participate in the study. They were separated into four groups according to their degree of satisfaction with online learning high satisfaction (HS) and low satisfaction (LS) with a 50:50 ratio of genders represented in each group. The study employed a 2 x 2 factorial design to examine the role of gender and satisfaction with online learning on academic performance and psychological well-being. Psychological Well-being was assessed using the Psychological Well-being scale by Ryff, while the experiences of students regarding online learning were evaluated using a self-constructed questionnaire that contained items related to their experiences with the new type of education, accessibility, engagement, and overall satisfaction. Data was analysed using descriptive analysis and analysis of variance (ANOVA). The findings revealed no gender differences in the academic performance or overall psychological well-being. Similarly, online learning did not have a significant effect on the academic outcome. Nevertheless, the significant interaction of gender and level of satisfaction was observed. However, the effect of online education on the measure of psychological well-being (Purpose in Life) had a significant effect, suggesting that students may have experienced difficulty in maintaining the sense of direction and motivation during the pandemic. Overall, although, academic performance was not adversely affected, but the findings highlight the importance of more focus enhancing the quality of online learning and student care services in future educational arrangements and academic support.

Keywords: *Academic Stress, Mental Health, Online Education, Psychological Well-being, Self-efficacy*

The novel coronavirus, initially discovered in Wuhan, China, at the end of December 2019, sparked a massive health crisis around the globe. Till the end of January 2020, the virus had already spread to India and had affected more than 177 countries, infecting over 722,000, and almost 34,000 people died (Sahu, 2020). The pandemic had

¹Associate Professor, Department of Psychology, ACA & SS, Eternal University, Baru Sahib, Sirmaur, HP, India.

²Research Scholar, Department of Psychology, ACA & SS, Eternal University, Baru Sahib, Sirmaur, HP, India

*Corresponding Author

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catastrophic consequences, especially in countries like China, the United States, South Korea, Iran, and much of Europe which indicates the global reach of the pandemic. Governments around the world reacted with emergency containment measures. It was followed by nationwide lockdowns, travel bans, school, office, and non-essential services closures (Cowie and Myers, 2021).

Despite critical efforts of governments in every nation to safeguard people, the pandemic severely affected worldwide education, compelling educational institutions to undergo rapid and unplanned change from conventional face-to-face education to an online method of learning (WHO, 2020). Academic life was changed drastically due to lockdowns, social distancing, and travel restrictions to control the virus (Bedford and Oh et al., 2020; Esposito and Principi, 2020). Both undergraduate and postgraduate students experienced the impact of these global shutdowns of educational institutions for prolonged periods, cancellation of classes, delayed exams, and disorganized academic schedules, further affecting their academic, social, and emotional domains (UNESCO, 2020; Gewin, 2020).

Such an abrupt shift revealed the institutional preparedness gaps and further heightened the stress on students and academicians (Hodges and Bond et al., 2020). Even though applications like Zoom, Skype, Blackboard, and Moodle were rapidly transformed into the new classroom, it was an unequal and at times challenging adaptation process (Husky, Kovess & Swendsen, 2020). The digital divide can clearly be seen particularly in India and other regions of the world: many students had no or minimal access to the internet or digital devices (Nambiar, 2020). Furthermore, the teachers, particularly those living in rural areas, struggled pedagogically and technologically to adapt virtual instruction (Lederman, 2020).

The crisis also amplified existing educational disparities, on top of the preexisting pre-pandemic situation in which millions of children and youth were already out of school. Online education was an essential solution, but its fast growth revealed the inequality of access and preparedness (Gomes & Costa-Lobo et al., 2021). In addition, the pandemic had a great impact on mental health, with increased anxiety, loneliness, depression, and sleep disturbance among students (Werner et al, 2021).

Altogether, during and following the pandemic, the education systems of different countries were disrupted, which highlighted the necessity to focus on holistic well-being promotion. Aligning with WHO's concept of health as a physical, mental, and social factor, the post-pandemic period has reinforced the importance of supportive, inclusive, and resilient education systems (WHO, 2001).

Objective of the Study

This study examines the impact of online learning (following the pandemic) on the psychological well-being of school students and their academic achievement with a focus on gender disparity.

LITERATURE REVIEW

Emotional and Psychological Well-being in the Post-Pandemic Era

Studies conducted on younger population groups show the same susceptibilities. According to Bonati et al. (2021), almost 80 percent of the children aged 6-14 years in Italy reported being anxious during the period of quarantine, with disturbed routines, changes in diets, and sleep disturbances being very frequent. Moreover, Duncan, Patte & Leatherdale (2021)

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established a direct association between poor mental health and low academic achievement among Canadian secondary school students, and well-being interventions must be incorporated into academic programs.

Certain pandemic-specific stressors were directly related to education provision. Hasan and Bao (2020) demonstrated that the negative experience with online education, which was viewed as the experience of e-Learning crack-up, played a significant role in increasing psychological distress among Bangladeshi college students, strengthening the fear of missing a year of study. Similarly, Duraku and Hoxha (2020) emphasized the systematic inefficiency in remote learning in Kosovo, which contributed to the apprehension of students, parents, and even teachers. Online Inequality and Sidelining.

Furthermore, the research conducted by Salama (2023) and Pestena Lages (2024) indicated that women, unemployed individuals, and those who live in small places of residence experienced the highest distress levels, highlighting the additional factors affecting mental health other than pandemic stressors.

A phenomenological study of underprivileged EFL students in Costa Rica by Sevilla-Morales and Chaves-Fernandez (2025) showed that the limited access to technology and internet resources exacerbated mental health challenges during distance education. Having switched to face-to-face learning did not help eliminate these disparities; however, it revealed the long-standing psychological cost of being excluded from education.

Online Learning and Academic Outcomes

Some research focused on the pedagogic and psychological consequences of the sudden transition to distance learning. Sharma and Saini (2024) evaluated the overall situation in the field of higher education after the pandemic and indicated that adaptive teaching strategies, as well as the quality of instruction and student engagement, determined the level of student learning and performance.

Zheng, Bender, and Lyon (2021), in their study of professional education, also discovered that the performance of dental students did not change or even deteriorate during online education, which indicates that properly designed digital learning can be as academically effective as face-to-face learning. Similarly, Lim et al. (2024) found that Filipino college students with academic burnout were inclined to use coping strategies extensively, which led to the conclusion that holistic support from institutions is necessary.

Mixed results were achieved with blended learning models. Al-Fodeh et al. (2021) established that most dental students felt that clinical skills could not be effectively delivered online, although a major part of the sample preferred blended delivery methods to other theoretical parts. In the same vein, Giday and Perumal (2024) have discovered that the quality and ease of use of the system, and not content alone, had a significant impact on the satisfaction of postgraduate students with online platforms.

Blended Learning Solutions and Problems

New course delivery was a response to the crisis. Nong, Chen and Lee (2023) developed an 8-week flipped research methods course in China and found that academic self-efficacy had a significant effect on increasing engagement and self-efficacy in blended environments. Further, Jihan et al. (2023) demonstrated that the implementation of adaptive teaching and

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inclusive student teaching strategies enhanced the success of student engagement and mediated the success of students in terms of academic achievement studies in higher education in Indonesia.

The meta-analytic evidence by Ulum (2022) also demonstrated a moderately positive impact of online learning on academic performance in various settings, with the level of classes, country, and instructional strategy not having a significant impact on the results.

Academic Performance Dynamics and Motivation

Motivation and achievement in the post-pandemic context have been shown to have a complicated relationship. Gronofillo (2023) found that grade 10 students with high intrinsic and extrinsic motivation failed to show high performance in English, implying that demographic factors might outweigh motivational variables. In contrast, Diaz Hinostroza et al. (2024) found that there is a strong positive correlation between ICT use and academic performance in South Lima, reinforcing the importance of digital competence in contemporary learning.

In contrast, Spitzer and Musslick (2021) reported that the decreasing achievement of the lower-achieving students in math from Germany improved when schools were closed, suggesting that well-designed digital platforms can narrow down the achievement gaps. In the same vein, Bolatov et al. (2021) noted the positive impact of online learning on the mental health of medical students in Kazakhstan even though social isolation and academic dissatisfaction with their studies continued.

Theoretical and Systematic Overviews

Several scholars have adopted broader integrative approaches. The synthesis of over 400 studies on student well-being by Zamroni et al. (2024), revealed the critical gaps in research on spirituality, cultural values, and local wisdom. Further, Li, Hafeez, and Zaheer (2021) emphasized that students were underrepresented in pandemic recovery planning. Whereas Vaillancourt et al. (2021) asserted the inclusion of mental health services within schools as part of a national strategy. Finally, Zhu et al. (2021) warned that the strong measures of quarantine, epidemiologically required, amplified mental health challenges among vulnerable groups in the U.S., especially those who experienced economic hardship and social isolation.

Combined, this literature portrays a multi-dimensional image of post-pandemic education. Although students have been able to remain resilient in maintaining academic performance, the psychological aftermath of the pandemic remains deep in terms of socioeconomic status, digital access, instructional models, and resilience rates. The data across contexts consistently points to the requirement of an integrated approach to educational recovery, academic rigor with robust mental health services that may reduce digital inequities. The challenge ahead lies not in returning to “normal,” but in constructing a more equitable, resilient, and student-centered system of learning.

Research Gap

The impact of the pandemic on the psychological and academic performance of students has been the subject of an increasing amount of research, but there are still several important gaps in knowledge that need to be considered on priority. The evidence from research conducted to understand the Cross-cultural nature is limited by geographical fragmentation, which mainly concentrates on specific regions or nations. Although psychological, emotional distress, and

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academic difficulties remain the focus of research conducted in the past, integrative analyses that look at how these factors interact are scarce, especially when it comes to gender disparities, online learning satisfaction, and institutional reactions. Furthermore, a limited number of studies have systematically examined school-aged populations, who may be more vulnerable due to developmental and environmental factors, with the majority of the literature focusing on students in higher education. Another area that has received less attention from researchers is the function of socio-emotional support networks, such as family participation and institutional mental health services, in reducing academic and psychological distress following a pandemic. Furthermore, not enough research has been done on the long-term effects of digital learning environments on wellbeing and academic performance, particularly in rural or low-resource areas where digital divides still exist.

Conceptual Model

The conceptual model proposes that online learning experiences influence students' psychological well-being and academic performance. Satisfaction with online education and gender are expected to moderate these relationships.

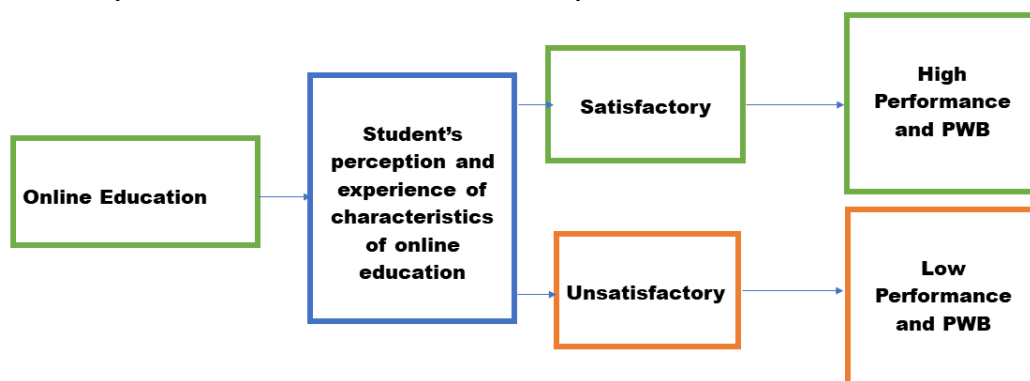


Figure. 1: Conceptual framework of the Study

Hypothesis

1. Female school students will report significantly higher psychological well-being than their male counterparts in the context of online learning.
2. Female school students will show significantly better academic performance than their male counterparts in the context of online learning.
3. School students reporting high satisfaction with online education will demonstrate significantly better psychological well-being than those reporting low satisfaction.
4. School students reporting high satisfaction with online education will demonstrate significantly better academic performance than those reporting low satisfaction.

METHODOLOGY

Research Design

This study employed a 2×2 factorial design to examine online learning satisfaction (high vs. low) and gender (male vs. female) as independent variables; psychological well-being and academic performance were treated as the dependent variables. Therefore, the design enabled examination of the main effect of gender; main effects of online learning satisfaction; and interaction effects between gender and satisfaction. Such an approach allows for a nuanced understanding of how demographic and experiential factors jointly influence psychological and academic outcomes.

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Sample

The sample comprised 120 school students (60 boys and 60 girls). To explore differences based on satisfaction with online education, the sample was further categorized into four equal subgroups: highly satisfied boys (n = 30), highly satisfied girls (n = 30), less satisfied boys (n = 30), and less satisfied girls (n = 30). Participants were drawn from J.P.S. Academy and D.A.V. Public School, located in Assandh town of Karnal district, Haryana, India. A random sampling technique was employed to ensure that each student had an equal chance of being included in the study.

Table 1: Research Design and Sample

IV-OE	Academic Performance and Psychological Wellbeing		Total
	M	F	
HS	30	30	60
LS	30	30	60
Total	60	60	120

**Notation: IV = Independent variable, HS = High Satisfaction, LS = Low Satisfaction, OE- Online Education*

Instruments

- **Demographic Profile Sheet:** A demographic information sheet was developed to collect background data relevant to the study. The data recorded for each participant included name, age, gender, religion, socioeconomic status, class level, place of residence, spoken language, parental occupation, and other relevant socio-demographic characteristics for contextual interpretation and generalizability of findings.
- **Psychological Wellbeing (PWB):** PWB was assessed using the 42-item scale of Carol D. Ryff's Psychological Wellbeing measure (1989). The statements on this scale, correspond to each of the six domains of psychological well-being: environmental mastery (items 2, 8, 14, 20, 26, 32, 38), autonomy (items 1, 7, 13, 19, 25, 31), personal growth (items 3, 9, 15, 21, 27, 33, 39), positive relationships with others (items 4, 10, 16, 22, 28, 34, 40), and finding the right job (items 1, 7, 13, 19, 25, 31). The task of participants were to rate the statements on a scale of 1 to 6, with 1 denoting strong agreement and 6 denoting strong dissent. Each domain has seven items. There are 20 negative items, 3, 5, 10, 13, 14, 15, 16, 17, 18, 19, 23, 26, 27, 30, 31, 32, 34, 36, 39, and 41 being reversed for scoring. According to Ryff's (1989a) initial paper, the six scales have acceptable internal consistency (α), ranging from .93 to .86. Furthermore, test-retest reliability results over six weeks ranged from 0.88 to 0.81, showing that questionnaire results hold over time in the absence of intervention.
- **Online Learning Satisfaction Survey:** A structured 24-item survey questionnaire was developed to assess students' levels of satisfaction and dissatisfaction with online classes. The instrument measures dimensions of the virtual classroom experience that could influence students' mental and physical well-being, as well as their academic performance. Responses were recorded on a Likert-type scale. Based on total scores, participants were categorized into high satisfaction (HS) and low satisfaction (LS) groups using percentile-based classification.
- **Academic Performance:** Academic performance was measured using the aggregate percentage of marks obtained in the previous academic year. Percentages were

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converted into a Cumulative Grade Point Average (CGPA) using the standardized formula:

$$\text{CGPA} = \text{Percentage of Marks}/9.5$$

This conversion enabled a standardized comparison of academic performance across participants in Indian schools.

Procedure

Formal permission to conduct the study was obtained from the school authorities before data collection. Informed consent was obtained from all participants after explaining the purpose and scope of the study. The data collection process adhered to standard research procedures, and clear, concise instructions were provided to ensure participants understood how to complete the questionnaires. The instruments were administered in a structured sequence:

- a) Demographic Profile (including date, name, age, gender, educational status, contact details, father's name, nationality, address, homeownership, occupation, and annual family income),
- b) Psychological Well-Being Scale (PWB),
- c) Online Classes Feedback Survey Questionnaire, and
- d) Academic Achievement Measure (CGPA).

Participants completed the questionnaires in a quiet, comfortable, and supervised classroom setting. Clear instructions were provided, and participants were encouraged to answer honestly. Upon completion, the responses were screened for completeness. Data were coded and entered into SPSS for analysis.

RESULTS

Descriptive Statistics: Average Scores

Table 2: The Values of Psychological Well-being (AU) against Gender and Level of Online Education

Groups	M	F	AVG
HS	27.20	26.65	26.92
LS	26.35	26.25	26.30
AVG	26.77	26.45	

**Notation: AU= Autonomy; LS= Low Satisfaction; HS= High Satisfaction*

Table 2 displays the mean of psychological well-being scores across gender and levels of online education satisfaction. In the high satisfaction (HS) group, males reported a slightly higher mean score ($M = 27.20$) than females ($M = 26.65$); differences were negligible in the low satisfaction (LS) group, with males ($M = 26.35$) and females ($M = 26.25$). Overall, males ($M = 26.77$) and the higher satisfied students ($M = 26.92$) reported marginally higher well-being than females ($M = 26.45$) and low-satisfaction (LS) group ($M = 26.30$).

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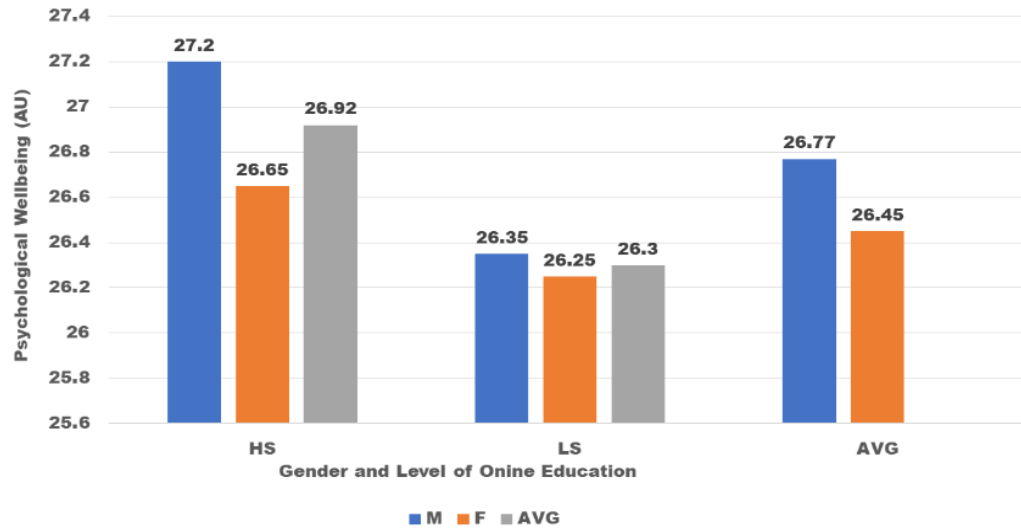


Figure 2: Estimated Marginal Mean of PWB (AU)

Table 3: The Values of Psychological Well-being (EM) against Gender and Level of Online Education

Groups	M	F	AVG
HS	26.05	26.75	26.40
LS	25.30	25.23	25.26
AVG	25.67	25.99	

**Notation: EM= Environmental Mastery; LS= Low Satisfaction; HS= High Satisfaction*

Table 3 presents mean emotional well-being (EM) scores across gender and online education satisfaction. In the high-satisfaction (HS) group, females (M = 26.75) scored slightly higher than males (M = 26.05), whereas differences in the low-satisfaction (LS) group were negligible (males: M = 25.30; females: M = 25.23). Overall, females (M = 25.99) and highly satisfied students (M = 26.40) reported marginally higher emotional well-being than males (M = 25.67) and low satisfaction students (M = 25.26).

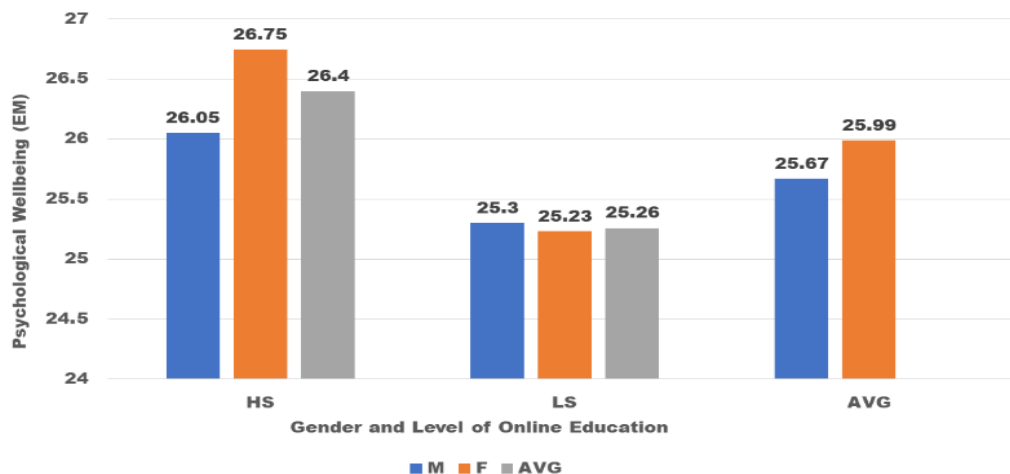


Figure 3: Estimated Marginal Mean of PWB (EM)

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Table 4: The Values of Psychological Well-being (PG) against Gender and Level of Online Education

Groups	M	F	AVG
HS	26.20	28.65	27.42
LS	28.05	24.93	26.49
AVG	27.12	26.79	

**Notation: PG= Personal Growth; LS= Low Satisfaction; HS= High Satisfaction*

Table 4 displays the mean scores for personal growth (PG), categorized by gender and level of satisfaction with online education. In the high satisfaction (HS) group, females (M = 28.65) scored higher than males (M = 26.20), whereas in the low-satisfaction (LS) group, males (M = 28.05) exceeded females (M = 24.93). Overall gender differences were minimal (males: M = 27.12; females; M = 26.79).

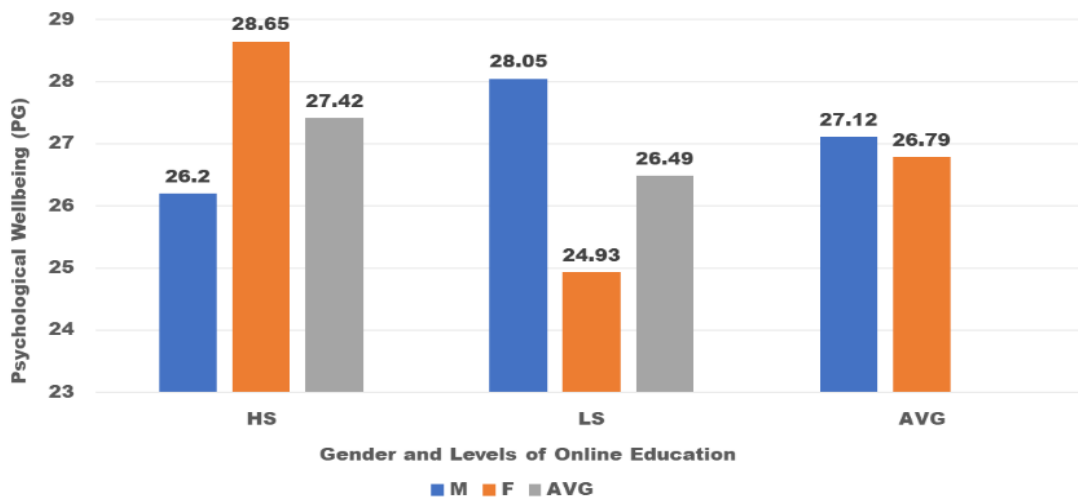


Figure 4: Estimated Marginal Mean of PWB (PG)

Table 5: The Values of Psychological Well-being (PR) against Gender and Level of Online Education

Groups	M	F	AVG
HS	26.35	28.05	27.20
LS	27.10	27.10	27.10
AVG	26.72	27.57	

**Notation: PR= Personal Relations with Others; LS= Low Satisfaction; HS= High Satisfaction*

Table 5 presents the mean scores for the purpose in life (PR) across gender and online education satisfaction. In the high-satisfaction (HS) group, females (M = 28.05) scored higher than males (M = 26.35), whereas both genders in the low-satisfaction (LS) group showed identical scores (M = 27.10). Overall, females (M = 27.57) reported slightly higher score than males (M = 26.72).

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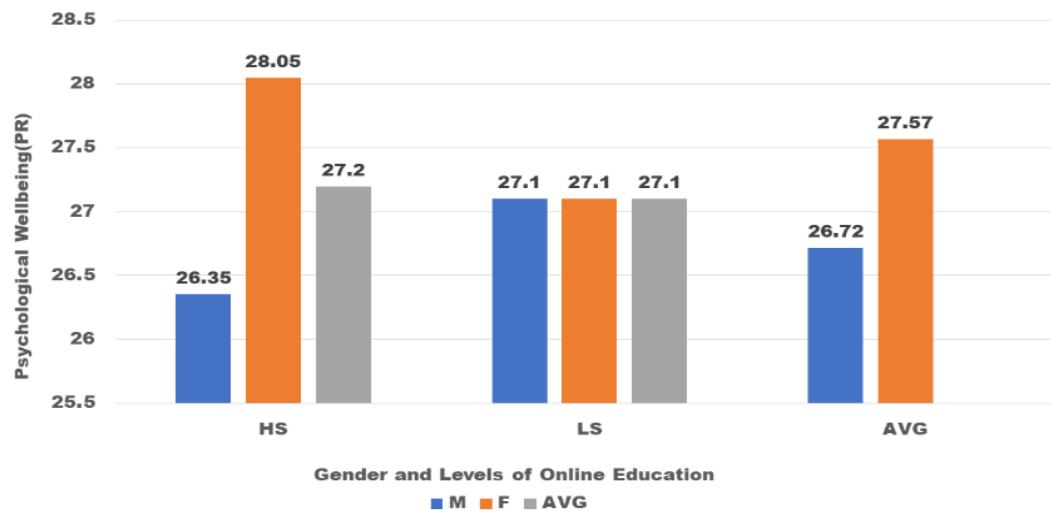


Figure. 5: Estimated Marginal Mean of PWB (PR)

Table 6: The Values of Psychological Well-being (PL) against Gender and Level of Online Education

Groups	M	F	AVG
HS	28.45	28.35	28.40
LS	26.80	25.42	26.11
AVG	27.62	26.88	

**Notation: PL= Purpose in Life; LS= Low Satisfaction; HS= High Satisfaction*

Table 6 shows the mean scores for the positive relations (PL) across gender and online education satisfaction. In the high-satisfaction (HS) group, males (M = 28.45) and females (M = 28.35) scored almost identically. In the low-satisfaction (LS) group, males (M = 26.80) scored higher than females (M = 25.42). Overall, males (M = 27.62) reported slightly higher scores than females (M = 26.88).

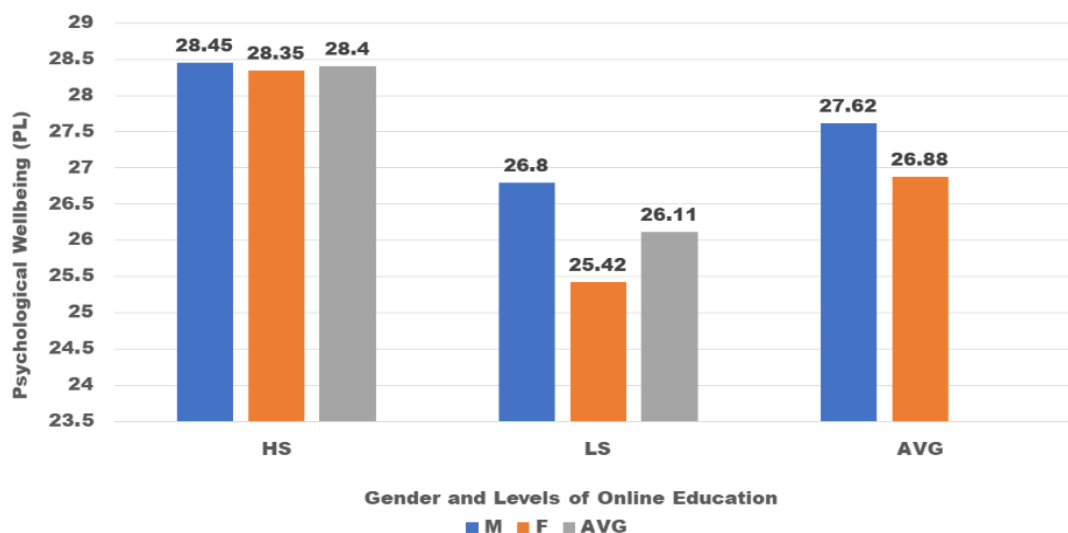


Figure. 6: Estimated Marginal Mean of PWB (PL)

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Table 7: The Values of Psychological Well-being (SA) against Gender and Level of Online Education

Groups	M	F	AVG
HS	26.60	29.10	27.85
LS	27.25	26.45	26.85
AVG	26.92	27.77	

**Notation: SA= Self-Acceptance; LS= Low Satisfaction; HS= High Satisfaction*

Table 7 presents the mean scores for self-acceptance (SA) across gender and online education satisfaction. In the high-satisfaction (HS) group, females (M = 29.10) scored notably higher than males (M = 26.60). In contrast, in the low-satisfaction (LS) group, males (M = 27.25) scored slightly higher than females (M = 26.45). Overall averages reveal that females (M = 27.77) scored marginally higher than males (M = 26.92), implying a slight gender advantage in self-acceptance, largely driven by the high-satisfaction group.

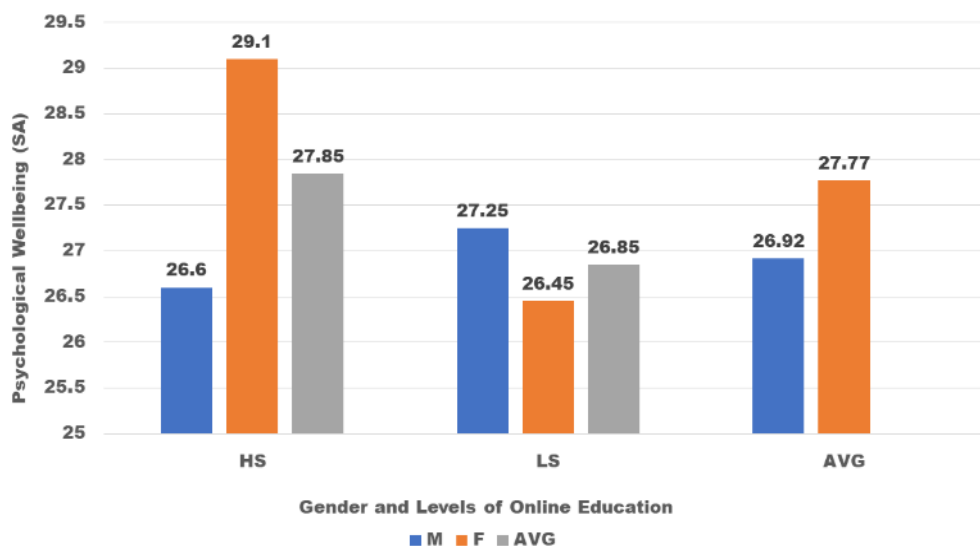


Figure 7: Estimated Marginal Mean of PWB (SA)

Table 8: The Values of Academic Performance (CGPA) against Gender and Level of Online Education

Groups	M	F	AVG
HS	7.47	7.20	7.33
LS	7.32	6.97	7.14
AVG	7.39	7.08	

**Notation: CGPA= Cumulative Grade Point Average; LS= Low Satisfaction; HS= High Satisfaction*

Table 8 displays the mean CGPA scores, representing academic performance, across gender and levels of online education satisfaction. In the high satisfaction (HS) group, males (M = 7.47) slightly outperformed females (M = 7.20). Similarly, in the low-satisfaction (LS) group, males (M = 7.32) scored higher than females (M = 6.97). Overall, males (M = 7.39) achieved higher academic performance compared to females (M = 7.08).

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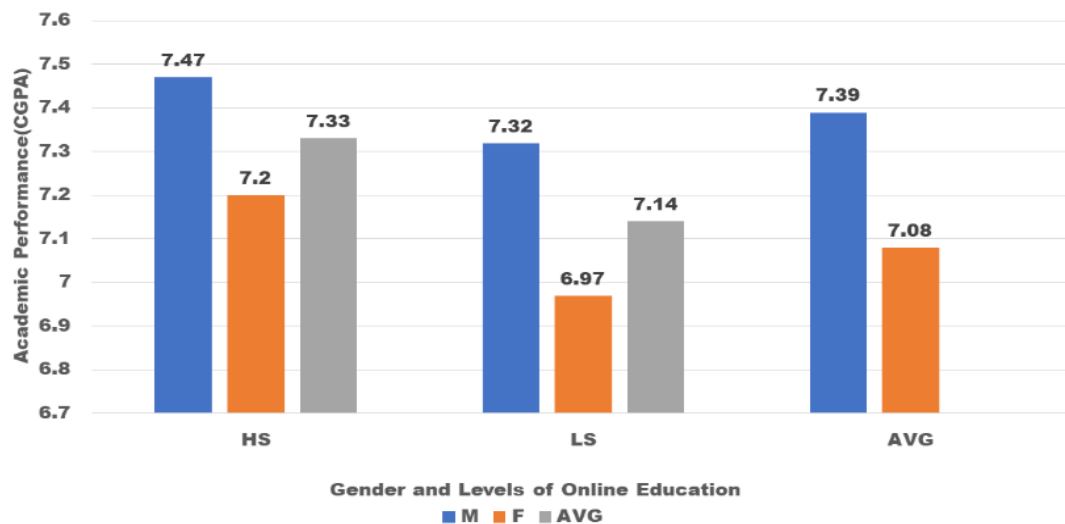


Figure 8: Estimated Marginal Mean of Academic Performance (CGPA)

Univariate Analysis (A 2×2 ANOVA)

Table 9: A 2×2 ANOVA Performed to observe the Effect of Online Education on Psychological well-being (AU) among Male and Female School Students

Source	Ss	Df	Ms	F	P
Total	Total	87179.00	120		
G	2.81	1	2.81	0.13	0.71 p> 0.05 NS
OES	10.41	1	10.41	0.49	0.48 p>0.05 NS
G × OES	1.35	1	1.35	0.06	0.80 p>0.05 NS
Error	2419.15	116	20.85		

**Notation: G= Gender; OES= Online Education Satisfaction; PWB= Psychological Wellbeing; AU= Autonomy; df= Degrees of Freedom; NS= non-Significant*

Table 9 shows the effects of gender and online education satisfaction on autonomy. The main effect of gender, $F(1, 116) = 0.13$, $p = .71$, and satisfaction, $F(1, 116) = 0.49$, $p = 0.48$, were not significant. Boys ($M = 26.77$) and girls ($M = 26.45$) also showed nearly identical mean scores for highly satisfied ($M = 26.80$) and low satisfaction students ($M = 26.92$). The gender × satisfaction interaction was also non-significant, $F(1, 116) = 0.06$, $p = 0.80$. Accordingly, Hypotheses 1 and 2 were rejected.

Table 10: A 2×2 ANOVA Performed to observe the Effect of Online Education on Psychological well-being (EM) among Male and Female School Students

Source	Ss	Df	Ms	F	P
Total	81800.00	120			
G	2.60	1	2.60	0.14	0.70 p>0.05 NS
OES	34.50	1	34.50	1.91	0.16 p>0.05 NS
G × OES	4.00	1	4.00	0.22	0.63 p>0.05 NS
Error	2090.82	116	18.02		

**Notation: G= Gender; OES= Online Education Satisfaction; PWB= Psychological Wellbeing; EM= Environmental Mastery; df= Degrees of Freedom; NS= non-Significant*

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Table 10 examined the effect of gender and online education satisfaction on Environmental mastery (EM). Neither the main effect of gender, $F(1, 116) = 0.14, p = .70$, nor satisfaction, $F(1, 116) = 1.91, p = .16$, was significant. Boys ($M = 25.67$) and girls ($M = 25.99$) displayed nearly identical scores, as did highly satisfied ($M = 26.40$) and low satisfied students ($M = 25.24$). The gender $\times$ satisfaction interaction was also non-significant, $F(1, 116) = 0.22, p = .63$. Accordingly, Hypotheses 1 and 2, were rejected.

Table 11: A 2 $\times$ 2 ANOVA Performed to observe the Effect of Online Education on Psychological well-being (PG) among Male and Female School Students

Source	Ss	Df	Ms	F	P
Total	86533.00	120			
Gender	3.03	1	3.03	0.17	0.68 $p > 0.05$ NS
OES	23.43	1	23.43	1.31	0.25 $p > 0.05$ NS
G $\times$ OES	207.20	1	207.20	11.59	0.00 $p < 0.05$
Error	2072.67	116	17.86		

***Notation:** G= Gender; OES= Online Education Satisfaction; PWB= Psychological Wellbeing; PG= Personal Growth; df= Degrees of Freedom; NS= non-Significant

Table 11 summarizes the effects of gender and online education satisfaction on personal growth (PG) among school students. The main effect of gender, $F(1, 116) = 0.68, p > .05$ and online education satisfaction, $F(1, 116) = 0.25, p > .05$, were not significant; boys ($M = 27.12$) and girls ($M = 26.79$) as well as highly satisfied ($M = 27.42$) and low-satisfaction students ($M = 26.49$) reported slight difference in scores. However, the gender $\times$ online education satisfaction was statistically significant, $F(1, 116) = 0.001, p < .05$, indicating that the relationship between online education satisfaction and personal growth differed by gender. Hypotheses, 1 and 2, were therefore not accepted, whereas the interaction effect was upheld.

Table 12: A 2 $\times$ 2 ANOVA Performed to observe the Effect of Online Education on Psychological wellbeing (PR) among Male and Female School Students

Source	Ss	df	Ms	F	P
Total	90551.00	120			
Gender	19.26	1	19.26	0.75	0.38 $p > 0.05$ NS
OE	0.26	1	0.26	0.01	0.91 $p > 0.05$ NS
G $\times$ OE	19.26	1	19.26	0.75	0.38 $p > 0.05$ NS
Error	2977.45	116	25.66		

***Notation:** G= Gender; OE= Online Education; PWB= Psychological Wellbeing; df= Degrees of Freedom; PR= Personal Relations with Others; NS= non-Significant

Table 12 reports the effects of gender and online education satisfaction on positive relations with others (PR) among school students. The main effects of gender, $F(1, 116) = 0.75, p = .38$, and online education satisfaction, $F(1, 116) = 0.01, p = .9$, were not significant. Boys ($M = 26.72$) and girls ($M = 27.57$), as well as highly satisfied ($M = 27.20$) and low satisfaction students ($M = 27.10$), reported slight differences. The gender $\times$ online education satisfaction was also non-significant, $F(1, 116) = 0.75, p = 0.38$. Accordingly, Hypotheses 1 and 2 were rejected, indicating no significant effects on positive relations.

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Table 13: A 2×2 ANOVA Performed to observe the Effect of Online Education on Psychological well-being (PL) among Male and Female School Students

Source	Ss	Df	Ms	F	P
Total	91026.00	120			
Gender	14.50	1	14.50	0.71	0.40 p>0.05 NS
OE	139.53	1	139.53	6.87	0.01 p<0.05
G × OE	10.83	1	10.83	0.53	0.46 p>0.05 NS
Error	2353.42	116	20.28		

**Notation:* G= Gender; OE= Online Education; PWB= Psychological Wellbeing; PL= Purpose in Life; df= Degrees of Freedom; NS= non-Significant

Table 13 demonstrates the effect of gender and online education satisfaction on purpose in life (PL) among school students. The main effect of gender, $F(1, 116) = 0.71$, $p = .40$, was not significant, with boys ($M = 27.62$) and girls ($M = 26.88$). This led to the rejection of Hypothesis 1. Whereas the main effect of online education satisfaction was statistically significant, $F(1, 116) = 6.87$, $p = .01$, led to the acceptance of Hypothesis 2. The gender × online education satisfaction interaction was not statistically significant, $F(1, 116) = 0.53$, $p = 0.46$.

Table 14: A 2×2 ANOVA Performed to observe the Effect of Online Education on Psychological well-being (SA) among Male and Female School Students

Source	Ss	df	Ms	F	P
Total	90547.00	120			
Gender	19.26	1	19.26	0.90	0.34 p>0.05 NS
OE	26.66	1	26.66	1.25	0.26 p>0.05 NS
G × OE	72.60	1	72.60	3.40	0.06 p>0.05 NS
Error	2473.05	116	21.31		

**Notation:* G= Gender; OE= Online Education; PWB= Psychological Wellbeing; SA= Self-Acceptance; df= Degrees of Freedom; NS= non-Significant

Table 14 depicts the effect of gender and online education satisfaction on self-acceptance (SA) among school students. The main effect of gender, $F(1, 116) = 0.90$, $p = 0.34$, and online education satisfaction were non-significant. Boys ($M = 26.92$) and girls ($M = 27.77$), as well as highly satisfied ($M = 27.85$) and low satisfaction students ($M = 26.85$). This minimal gap led to the rejection of Hypotheses 1 and 2. Similarly, the gender × online education satisfaction was non-significant, $F(1, 116) = 1.25$, $p = 0.26$.

Table 15: A 2×2 ANOVA Performed to observe the Effect of Online Education on Academic Performance (CGPA)

Source	Ss	Df	Ms	F	P
Total	6450.03	120			
Gender	2.51	1	2.51	1.83	0.17
OE	0.987	1	0.98	0.72	0.39
G × OE	0.041	1	0.04	0.03	0.86
Error	159.026	116	1.37		

**Notation:* G= Gender; OE= Online Education; PWB= CGPA; Cumulative Grade Point Average; df= Degrees of Freedom; NS= non-Significant

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Table 15 reports the effects of gender and online education satisfaction on academic performance, measured by CGPA. The main effect of gender, $F(1, 116) = 1.83, p = .17$ and online education satisfaction, $F(1, 116) = 0.72, p = .39$, were non-significant. Boys ($M = 7.39$) and girls ($M = 7.08$), as well as highly satisfied students ($M = 7.33$), had nearly the same academic performance as those with low satisfaction ($M = 7.14$), displaying only a slight difference in mean scores. This minimal variation led to the rejection of Hypotheses 3 and 4. The gender $\times$ online education satisfaction interaction was also non-significant, $F(1, 116) = 0.03, p = 0.86$.

DISCUSSION

The present study examined the effect of gender and online education satisfaction on psychological well-being and academic performance among boys and girls' college students. Overall, findings show that there is a limited effect of gender and online education satisfaction on PWB and Academic performance among boys and girls school students. For Autonomy (AU) and Environmental Mastery (EM), neither gender, nor satisfaction level, nor the interaction of both yielded any significant effect, suggesting stability in self-regulation and environmental competence across groups. These findings are consistent with findings of (Azad, 2024; Azad & Kaur, 2024; Cao et al., 2020; Carriedo & Méndez-Giménez, 2020; Chen & Lin, 2020).

For personal growth, although the descriptive trends varied by gender and online education satisfaction levels. Only the gender $\times$ online education satisfaction interaction effect was significant. This finding indicates that the relationship between satisfaction with online education and personal growth differed between boys and girls. These findings are consistent with literature emphasizing contextual and gender-sensitive pathways in PWB development (Ryff & Keyes, 1995; Fernández-Castillo & Rojas, 2009; González-Gómez, 2012; Dang et al., 2016).

For Positive relations (PR), no significant main or interaction effect was observed, indicating comparable relational well-being across genders and satisfaction groups. A similar pattern has been observed in studies examining social well-being and during remote learning (Baloch, Sundarasan & Al Sukayt, 2021).

In contrast, Purpose in Life (PL) indicates a significant main effect of online education satisfaction on PL, showing that the students who were more satisfied with online education reported greater goal clarity and directedness. The findings are supported by (Li, Hafeez & Zaheer, 2020; Bolatov et al., 2021; Hasan & Bao, 2020; Tan et al., 2021).

For self-acceptance (SA), neither the main effect nor interaction reached statistical significance, although a marginal interaction was observed, suggesting relative stability in students' self-evaluation attitudes irrespective of gender and satisfaction level.

Finally, regarding academic performance (CGPA), no significant effects of gender, satisfaction, or their interaction were observed. Although boys demonstrated slightly higher mean CGPA scores, the differences were statistically non-significant. These findings are consistent with findings of (Spitzer & Musslick, 2021; Bolatov et al., 2021).

CONCLUSION

The findings suggest that online education satisfaction was selectively associated with certain well-being domains, particularly personal growth (PG), purpose in life (PL), while most

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psychological and academic outcomes remained statistically comparable across gender and satisfaction groups. These findings underscore the multidimensional nature of PWB and highlight the importance of contextual and motivational factors in understanding student adjustment to online education.

Limitations, Implications, and Future Scope

The present study has several limitations, also providing important implications and scope for future research endeavours. One limitation pointed out the availability of appropriate measurement tools for assessing academic achievement in a remote learning environment and the PWB of the school students. The development of a more refined and context-specific instrument would enable research scholars to record the complex issue of these constructs more precisely and with great accuracy. This would also lead not only to increased validity of the findings but also contribute to a deeper understanding of the relationship between remote learning environments and mental health outcomes.

Other important limitations indicated the need for incorporating qualitative methods in future research endeavours, such as interviews, focus group discussions, and open-ended responses to explore lived experiences, perceptions, and emotional responses of the subjects under study in greater depth beyond the statistical insight of quantitative methods.

Moreover, future studies should include larger and more geographically diverse sample to enhance the generalizability of the findings. A larger and more representative sample would improve the robustness of the findings and enable broader conclusion of relationship between remote learning environments, academic performance, and mental health outcomes.

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Conflict of Interest

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