INTERNATIONAL RESEARCH JOURNAL OF ENGINEERING & APPLIED SCIENCES
ISSN: 2322-0821(O)
ISSN: 2394-9910(P)
VOLUME 14 ISSUE 1
Jan 2026 - Mar 2026
www.irjeas.org

Research Article

STRESS AND SOCIAL ADJUSTMENT IN CHANGING LEARNING ENVIRONMENTS

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DOI–10.55083/irjeas.2026.v14i01015

Abstract: There has been a paradigm shift in the way students interact in both their learning ability and social roles with the transitioning process from offline classes to e-classes or a combination thereof, thus posing new challenges regarding the psychological well-being of the students. This study investigates the effects of various forms of classes regarding the levels of stress and adaptability of the secondary school-going students. Through the application of a descriptive method, involving 250 participants aged 18-30 enrolled in offline, e-classes, or combination classes, this study applied a structured interview schedule, along with a Social Adjustment Scale and Stress Assessment Scale, both of which have been professionally verified, along with high internal consistency with Cronbach Alpha Values of 0.81 & 0.78, respectively.The statistical tests employed include descriptive statistical analysis, one-way ANOVA, independent sample t-test, and Pearson correlation. The level of significance was set at 0.05. The findings showed that there existed significant differences between the levels of stress experienced by students in the different learning environments, $F = 15.32$, $p < 0.001$. The highest level of stress was experienced by students studying online, $M = 6.8$, $SD = 1.5$, while the least was experienced by students studying face-to-face, $M = 4.5$, $SD = 1.2$. Additionally, there existed significant differences between social integration experienced by students in the different learning environments, $F = 18.45$, $p < 0.001$. The highest social integration was experienced by students studying face-to-face, $M = 7.2$, $SD = 1.1$, while the least was experienced by students studying online, $M = 4.3$, $SD = 1.4$. Last, there existed an inverse significant relationship between the levels of stress and social integration, $r = -0.56$, $p < 0.01$.These findings highlight the crucial impact of learning environments on students' experiences in terms of their emotions and social interactions. This study

emphasizes the pressing demand for intervention strategies derived from rigorous scientific research, with the ability to counter stress and enhance social interaction, especially in online education settings. By shedding light on these factors, the study lends credence for educators and policy developers in promoting learning environments for success and resilience.

Keywords: Stress, Social Adjustment, Learning Modalities, Secondary School Students, Online Learning, Hybrid Learning, In-person Learning.

1. INTRODUCTION

Current scenario in the field of education is such that there has been a paradigm shift, and the same has been made possible by the onset of the 'Covid19' pandemic and the utilization of 'technology' on a massive scale in its own way, and it has some implications in terms of 'class room learning,' its possible aids, and its alternatives through the utilization of different approaches of 'learning.' Paradigm shift in the field of education is made possible by the psychology of 'learning' and the psychology of 'behavior' in relation to 'learning(Tiwari, 2025).

Academic stress is a kind of mental pressure students experience as a response to the demands of learning, such as heavy workloads, examinations, and performance expectations. Research has demonstrated time and again that excessive academic pressure can result in anxiety, reduced motivation, and lower academic performance(Qi et al., 2025). In an online and hybrid environment, academic stress could be heightened by requirements for self-directed learning, technology issues, and lack of immediate support from instructors or peers(Chonkoeva et al., 2025).

Environmental Stress: This encompasses "the aspects of the learning environment which are external to the learner and which may serve as potential influencing factors upon the learner at the affective level. These may, but need not, include isolation, lack of opportunity for interaction with peers, peer pressure, as well as lack of boundaries between the educational environment and the family environment(Ansar Abbas et al., 2020)." learners that undertook distant learning courses during the previous pandemic are most probably influenced by environmental factors such as the availability of internet and environment among others(Wang, 2020).

Social adjustment

Social adjustment relates to the ability a learner possesses to create and sustain good personal relations as well as successfully adjust to new social contexts in the learning arena. Having good social adjustment will readily correlate to good levels of participation as well as outstanding levels of group activities and good levels of psychological well-being(Biniya et al., 2025). Non-participation in online learning will readily lead to feelings of isolation in regard to peer participation and general levels of satisfaction in learning(Yadav, 2020).

In addition to cognitive learning outcomes, learning environments are complex psychosocial spaces where students navigate emotional control, social relations, and a sense of belonging. The shift in learning delivery, especially the move to online and blended learning, has not only impacted the way knowledge is accessed but also how students experience academic pressure and social connection. Decreased face-to-face interactions, the blurring of boundaries between academic and personal spaces, and the demands for self-directed learning have been cited as important factors that contribute to increased stress levels while also limiting opportunities for social adjustment. These two challenges highlight the need to consider stress and social adjustment together, rather than in isolation, when assessing the effects of changing learning environments.

Category/Dimension 1 - Teaching and Learning Environment

However, despite the increased awareness regarding the research on online or blended education, still there exists a vast knowledge gap regarding its effects on stress levels and the level of adjustment(Malota & Mucsi, 2025). In fact, a vast majority of the existing knowledge had only dealt with one subject, either it is psychology or education, without even considering the other(Rani & D, 2025). This present study will attempt to satisfy this knowledge void that exists, particularly on secondary school students who will be at the same level of development wherein interaction, integration, and education are interconnected(Jardim & Soares, 2025).

Therefore, the research study attempts to explore how learning methods, stress levels, and social adjustments are interwoven amongst secondary school-going children(Yiang, 2024). Through comparisons of physical, online, and blended learning settings, the research will help in gaining insights into how learning environments affect not only the psychological aspects of children but also their social side(Villones et al., 2025). Such research outcomes will help in fashioning a learning environment that not only shapes and moulds children into better learners but also makes them more socially and psychologically adapted.

1.1 Objectives of the Study

This research will be conducted in a manner that will be guided by clear and specific research objectives which will examine the impact of learning modalities on second-level students in terms of their psychological and social effects. The research objectives in this regard will include:

a. To establish the amount of stress faced by students in offline, online and combination of both secondary schools.
b. To determine the level of social adjustment of the secondary school students in offline, online, and mixed learning environments.
c. To the relation between the level of stress and adaptability in students to different modes of learning.

These are observable and non-overlapping in meaning. Besides that, they relate or are congruent to the research questions of the study. Meaning that this is an organized study; it has some focus.

1.2 Research Questions

1. How do the levels of psychological stress felt by the students in the studied secondary schools differ among online learning environments, physical learning environments, and mixed learning environments?
2. How might the learning process affect the ability of students in adjusting and coping with the social part of life?
3. Can a statistical link be made between the degree of stress on the part of the students and the degree of social adjustment for different patterns of study?

1.3 Hypotheses of the study

On the basis of the above discussion and in light of the objectives, the null hypotheses to be tested are:

d. H_{01}:: There is no significant difference in the degree of stress felt in an offline setting, an online setting, or a mixed setup among students in secondary schools.
e. H_{02}: No significant variation in social adjustments among the students of the secondary school with the use of both online and offline learning approaches.
f. H_{03}: Stressed levels are not significantly related to the social adjustment of secondary students regardless of the leaning process.

Each of the aforementioned assumptions can and should be utilized as guidelines in executing a statistical analysis through the use of ANOVA, t-test, and Pearson Correlation in a bid to ensure the relationship between objectives and findings.

2. LITERATURE REVIEW

The online and blended learning settings have brought in many challenges too. These challenges have significant bearings on the psychological and social experiences of individuals with reference to the online and blended learning settings(Joseph & N. T., 2023). For instance, in many studies carried out on the topic of blended learning settings, it was ascertained that the students in the blended learning settings could manage and adjust themselves in these settings effectively if they experienced less stress with regard to their academic performance. Also, the students in the blended learning settings could be well-adjusted in the settings(Liu, 2024).

From a theoretical perspective, academic stress and social adjustment are highly interrelated constructs that are influenced by environmental demands and coping resources. Theories of stress have long emphasized that when academic demands exceed an individual's perceived ability to cope, psychological distress tends to escalate, often manifesting as a problem in motivation and emotional control. At the same time, theories of social adjustment have underscored the importance of interaction, feedback, and social belonging in facilitating adaptive functioning in educational contexts. When learning environments provide limited opportunities for significant peer and teacher interaction, as is often the case in fully online educational programs, students are likely to experience both increased stress and decreased social integration. Despite the increasing awareness of these considerations, much of the existing body of literature has focused on stress and social adjustment as separate constructs.

Research studies emphasizing college stress and social support have illustrated that effective social connections and learning settings contribute towards minimizing stress and enhancing college motivation. Students with effective social support perform better and are more resilient, compared to students who experience higher stress and have poor social support. Gender and motivation differences might affect college stress as well. Although considerable evidence exists in the college setting, it might not be precise when considering young students in secondary schools(Ahmed, 2025).

Related studies exploring perceptions of the learning environment and stress have revealed that the ability to cope with stress improves over time through familiarity with the environment. Individuals who are more familiar with guided support usually have greater ability to handle stress. However, the focus on postgraduate or professional groups might not adequately identify the associated social pressures felt by secondary school-going students in a developmentally critical phase of their life(Permatasari, 2024).

Research studies that estimated interventions designed for stress management identified that skill-based coping strategies can ensure positive outcomes in terms of students' social, emotional, and academic adjustment. Students experiencing such stress management training activities show improved peer interactions, increased levels of self-confidence, and higher levels of involvement in academic-related activities. Although these studies are clear about specific interventions that could yield positive results, there is a generalization in most existing studies of outcomes with regard to certain groups of students, leaving implications about general student adaptation to new modes of teaching(Cordova & Pantao, 2025).

Even the role of cyberspace interactions has been considered, in particular, the role of cyberspace platforms in helping in social adjustment. The students can maintain their present relationships and make new relationships through cyberspace applications. However, their participation, in particular, might be limited because of concerns about possible detrimental consequences and feelings of self-consciousness in cyberspace interactions(Singh & Serto, 2025).

Collectively, it seems that stress and social adjustment are complex issues highly influenced by the learning environment and support resources for coping with stress(Li, 2025). On the other hand, it can be observed that much of the literature gathered is generally either descriptive or contextual to older students, placed in a study focused on older students or students in specialized

learning environments. There is obviously a gap in the understanding of how different learning modalities impact stress and social adjustment for secondary students within both physical and digital learning modalities(Conwi et al., 2024).

3. METHODOLOGY

In the proposed study, the research methodology to be used is the Quantitative Research Design to explore the learning styles and their relation to the levels of social adjustments and stress among the students. The study design adopted took a form that is Representative, Reliable, and Valid.

3.1Research Design

This study used a descriptive survey design. One of the reasons why the design can be applied in relation to the proposed study is that the descriptive survey design has the capacity to enable the proposed study in collecting data from a massive number of participants in a descriptive way for the purpose of describing the prevailing circumstances associated with stress and social adjustment. Since there were no variables in manipulating students' psychological and social experiences in offline and online settings, as well as in offline and online settings combined in the proposed study, the descriptive survey design can be applicable in the proposed study.

3.2 Population and Sample

This research targets all students undertaking their learning within second-level institutions using different learning methods such as offline and online learning, among others.
In this research, the total number of the respondents is 250. This was indicated as N = 250. These are individuals between the ages of 18 to 30 years of age. The respondents were taken from varied levels. Besides, these individuals are from different learning settings. The respondents were both male and female. These comprised of both male and female respondents.

Also, the method adopted was a form of stratified sampling in order to ensure that an equal number of students from each of the three forms of learning was selected. Further, for each form of learning, a sampling method of convenience was applied in a way that took into consideration the availability of the students willing to participate in the research.

3.3 Tools Used for Data Collection

The data was collected using a structured research questionnaire, divided into three sections:

Demographic Data sheet

In this section, information was obtained related to age, gender, education level, and learning method, including whether online, physical, or a combination.

Social Adjustment Scale

The level of ranging in this study was anchored on the ability to relate or interact, feelings of membership, ease of communication, and involvement in academic and association-related activities.

Stress Assessment Scale

The scale used measured psychological stress, academic pressures, workload tensions, and the respondent's emotional state.

Validity and Reliability

For content validity test, the questionnaire was administrated to the experts in the fields of education and psychology. These experts assessed if the constructs of stress and social adjustment measured in the questionnaire are appropriate.

a. Reliability of the tool was established using the Cronbach alpha procedure.
b. The reliability coefficient alpha on the Social Adjustment Scale is $\alpha = 0.81$.
c. The alpha coefficient of the Stress Assessment Scale for reliability is 0.78.

These values indicate that there was adequate internal consistency between the characteristics assessed by both of the scales.

3.4 Process of Data Collection

However, this survey was conducted among students both online and offline to ensure that it is as comprehensive as possible. Prior to commencing to gather information, notice was given to participants or students about the planned purpose of undertaking this survey. Anonymity and confidentiality in answering the survey are assured, and any student is free to withdraw from taking part in this survey at any given time.

3.5 Data Analysis Techniques

Following the data gathering exercise, the data gathered is encoded and evaluated using statistical software. Among the statistical approaches used in the analysis include

a. Descriptive Statistics: Mean, Standard Deviation, Frequency
b. Comparative Analysis: Independent t-tests and ANO
c. Correlation Analysis: Correlation between stress and social adjustments.

These assisted in establishing the significance of the learning mode and its impact on the social adjustment and levels of stress among the students.

3.6 Ethical Considerations

Standard ethics were followed: participation was wholly voluntary, and one could withdraw from the process at any stage. Data used were for academic purposes only, with privacy assured by storage.

3.7 Algorithm and Statistical Equations Used

3.7.1 Algorithm for the study on social adjustment and stress across the learning modalities

Algorithm 1: Analytical procedure for social adjustment and stress across learning modalities

Step 1: Identify key variables:

a. Independent Variable: Learning Modality-Offline/Online/Hybrid
b. Dependent Variables: Social Adjustment Score, Stress Score

Step 2: Select an appropriate descriptive and comparative quantitative research design that will be suitable for the analysis across modalities of differences.

Step 3: Stratified plus convenience sampling are used to identify the targeted population of students and its representative sample.

Step 4: Preparation and validation of the structured questionnaire will include

a. Structure
b. Social Adjustment Scale
c. Stress Assessment Scale

Step 5: The administration of the questionnaire will be done via online and offline modes.

Step 6: Gather the responses, then randomly assign the subjects to each learning modality group.

Step 7: Encode the data and clean it, removing incomplete or inconsistent entries.

Step 8: Calculate descriptive statistics for

a. Mean Social Adjustment Score
b. Mean Stress Score
c. Quantifying differences among groups

Step 9: Apply Comparative Statistical Tests

a. Comparing two groups with an independent t-test
b. One-way ANOVA-for three modalities

Step 10: To determine the direction and strength of the relationship, calculate the correlation between the Social Adjustment & Stress Scores.

Step 11: Interpret results regarding whether learning modality significantly influenced social adjustment and stress.

Step 12: Present findings, conclusions, and implications.

3.7.2 Equations used in this analysis

Following are the equations rewritten to suit variables such as Social Adjustment, Stress, and Learning Modalities.

1.Descriptive Statistics

Mean Social Adjustment Score

$$\overline{SA} = \frac{\sum \quad SA_i}{N}$$

Mean Stress Score

$$\overline{ST} = \frac{\sum \quad ST_i}{N}$$

Standard Deviation

$$SD = \sqrt{\frac{\sum \quad (X - \bar{X})^2}{N - 1}}$$

2.Independent Sample t-Test

(Used when comparing two learning modalities, e.g., Offline vs Online.)

$$t = \frac{\bar{X}_{\text{offline}} - \bar{X}_{\text{online}}}{\sqrt{\frac{SD^2_{\text{offline}}}{n_{\text{offline}}} + \frac{SD^2_{\text{online}}}{n_{\text{online}}}}}$$

Where:

a. X = Social Adjustment or Stress Score
b. SD = Standard Deviation
c. n = Sample size of each modality

3. One-Way ANOVA (For Offline, Online, Hybrid)

$$F = \frac{SS_{\text{between}} / df_{\text{between}}}{SS_{\text{within}} / df_{\text{within}}}$$

Where:

a. SS_{between} = Variation between learning modality groups
b. SS_{within} = Variation within groups
c. df = Degrees of freedom

4. Pearson Correlation Between Social Adjustment and Stress

$$r = \frac{\sum \quad (SA - \overline{SA})(ST - \overline{ST})}{\sqrt{\sum \quad (SA - SA)^2 \sum \quad (ST - ST)^2}}$$

Interpretation:

a. $r < 0$: Higher stress is associated with lower social adjustment
b. $r > 0$: Higher stress is associated with higher social adjustment
c. $r = 0$: No relationship

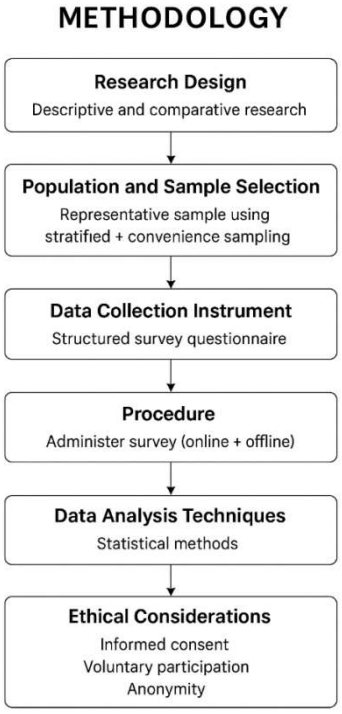

Figure 1: Overview of the Research Methodology Framework

4. RESULTS AND INTERPRETATION

This study will now discuss the results of the statistical analysis of stress factors and social adjustments for various learning types. When presenting results in mainstream studies in quantitative research, Mean, Standard Devitions, F Value, and p Values are employed.

4.1 Demographic Distribution of Respondents

This research targeted students in a secondary school and used a total of 250 students as participants. The targeted ages are as follows: 60% of them belong to ages 18-24, 33.3% belong to ages 25-30, and 6.7% of them belong to above 30 years.

What this means is that the population of the sample comprises students who are in the active phase of secondary and higher secondary education and are mostly participating in the digital learning environment.

4.2 Stress Levels Across Learning Modalities

Table presents the mean stress scores of students across learning environments.

Table 1: Mean (M) and Standard Deviation (SD) of Stress Levels Across Learning Modes

Learning Mode	M	SD
In-person	4.5	1.2
Online	6.8	1.5
Hybrid	5.6	1.3

The result from the one-way ANOVA analysis shows that there were significantly varying levels of stress in the three types of learning.

There was a marked difference in the level of stress experienced:

$F(2, 147) = 15.32, p < .001$

Since the value of the p-value was less than 0.05, the null hypothesis (H_{01}) was rejected. This showed that learning modality significantly affected the levels of stress shown by the students.

In the case of online learning, students experienced more stress than in hybrid and offline learning, and in offline learning, students experienced less stress than in hybrid and offline learning.

The average stress score for online learning is 6.8, for combined learning is 5.6, and for traditional learning is 4.5.

4.3 Social Adjustment Across Learning Modalities

Table gives social adjustment scores according to modes of learning.

Table 2: Mean (M) and Standard Deviation (SD) of Social Adjustment Scores Across Learning Modes

Learning Mode	M	SD
In-person	7.2	1.1
Online	4.3	1.4
Hybrid	6.0	1.2

One-way ANOVA showed that there existed a statistically significant difference in social adjustment among the three learning modalities:

$F(2, 147) = 18.45$, $p < .001$

Since $p < 0.05$, therefore H_{02} was rejected, which implies that learning modality significantly influences the students' social adjustment.

Students in pure in-person learning exhibited the highest social adjustment, with a mean of 7.2, whereas online learners had the lowest, with a mean of 4.3. Hybrid learners manifested a moderate adjustment with a mean of 6.0. This shows that face-to-face interpersonal interaction is critical for building peer relationships and emotional belonging.

4.4 Relationship Between Stress and Social Adjustment

Pearson correlation coefficients have been employed in determining the association between stress and social adjustment.

The correlation in this case came out to be as follows: Negative and statistically significant

$r = –0.56$, $p < .01$.

As p-Value is less than 0.01, the result was significant, thus the null hypothesis was rejected; $H0_3$: No link exists between the high level of stress and lack of adjustment ability in the aspects of interaction, communication, and feeling of belonging. This hypothesis was linked to the implication that there exists a relationship between the increase in stress levels and the lack of adjustment ability in the aspects of interaction, communication, and the feeling of belonging.

4.5 Integrated Interpretation

As evident from the above statistics, it has been revealed that the learning mode affects psychological as well as social aspects. Online learning environments are considered to be full of high levels of stress, as well as poor levels of social adjustment, while face-to-face learning environments are considered to be the most supportive in terms of emotional stability and integration. Self-directed learning environment lies in between.

Keeping all these concepts in mind, it can be asserted that the results achieved in this study affirm the validity of the following fact—the school building is a physical, psychological, and social environment for the pupils.

Table 3: Age of the Respondents

Category	Frequency	Percentage
18–24 years	150	60.0%
25–30 years	83	33.2%
30+ years	17	6.8%
Total	**250**	**100%**

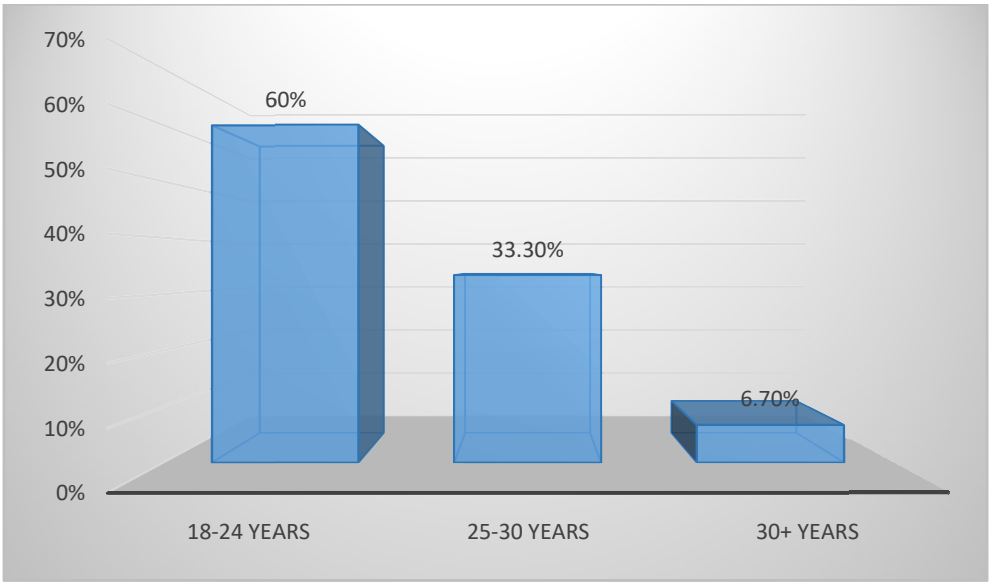

Figure 2: Age of the Respondents

Figure 2: The 18–24 age bracket constitutes the bulk of the sample, with 60% of the total responding. That fact immediately indicates that the largest proportion of the sample is comprised of younger pupils probably indicative of the educational landscape as it is right now. Young professionals or students who have enrolled into continuing education between the ages of 25-30 years old made up the second biggest category, accounting for 33.3% of the findings. Those aged 30 and above accounted for the smallest subset, totaling only 6.7% of the total. These figures immediately show that research is using younger participants, which perhaps impacts the results pertaining to social adjustment and stress in dynamic classrooms.

Table 4: Stress Levels by Learning Mode

Learning Mode	Average Stress Score (1-10)	Standard Deviation
In-Person	4.5	1.2
Online	6.8	1.5
Hybrid	5.6	1.3

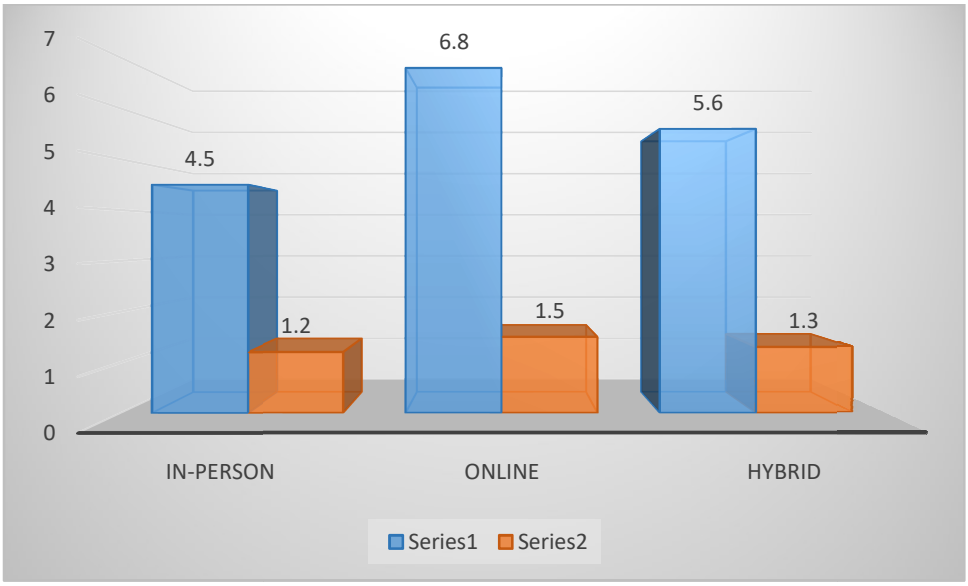

Figure 3: Stress Levels by Learning Mode

Figure 3: Mean stress ratings across students vary significantly when separated by learning method. Those who experienced in-person learning reported, on average, a relatively moderate level of stress, with an average score of 4.5. Responses were consistent, with a standard deviation of 1.2. Far higher levels of stress are reflected among the students learning online-mean 6.8 and SD 1.5. This would point to the fact that an online learning environment heightens feelings of anxiety and overload. Added to this, students learning in hybrid modes face further challenges, placing additional pressures on raising stress levels. Although there are possible advantages in having both face-to-face contact and flexibility afforded through online learning, the standard deviation is 1.3. Taken together, our findings indicate a need to focus attention on stress-reduction strategies particular to online learning environments.

Table 5: Social Adjustment Scores by Learning Mode

Learning Mode	Average Social Adjustment Score (1-10)	Standard Deviation
In-Person	7.2	1.1
Online	4.3	1.4
Hybrid	6.0	1.2

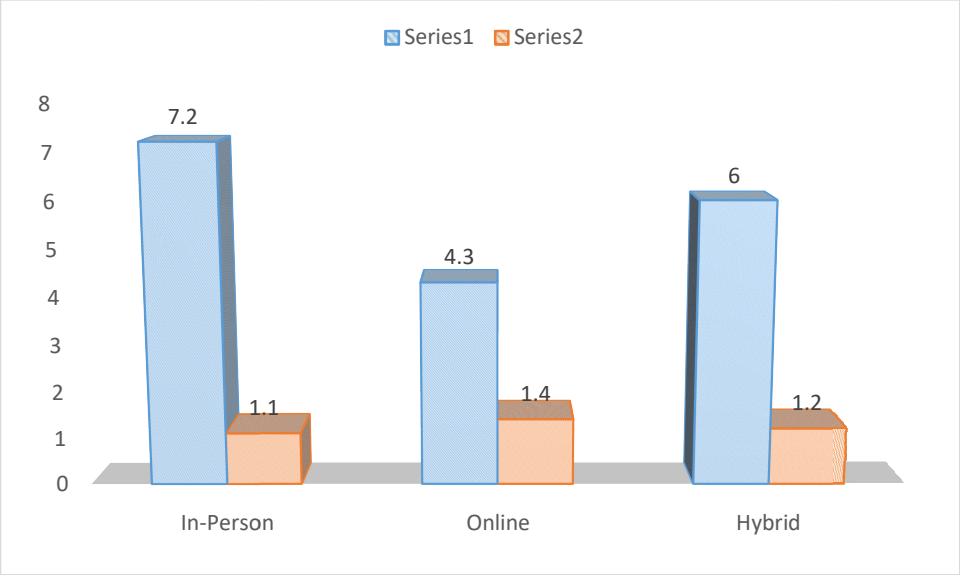

Figure 4: Social Adjustment Scores by Learning Mode

Figure 4: As the analysis of social adjustment scores by learning mode would suggest, students adjust socially in profoundly different ways across different learning environments. In-person students reported a highly consistent experience, very able to make connections and integrate socially, as reflected by an average social adjustment score of 7.2 and a 1.1 standard deviation. Online students expressed considerably less social adjustment, an average of 4.3 with a 1.4 standard deviation. This great disparity in scores suggests that barriers to developing social relationships in a virtual environment can have the negative consequences of isolation and disengagement. Hybrid students had an average score of 6.0 with a 1.2 standard deviation, revealing that, on balance, hybrid students experienced both advantages and difficulties. These findings point out the necessity to provide opportunities for social interaction in online and hybrid models as ways of facilitating students' ability to integrate socially and feel good about themselves.

Visual representation of graph

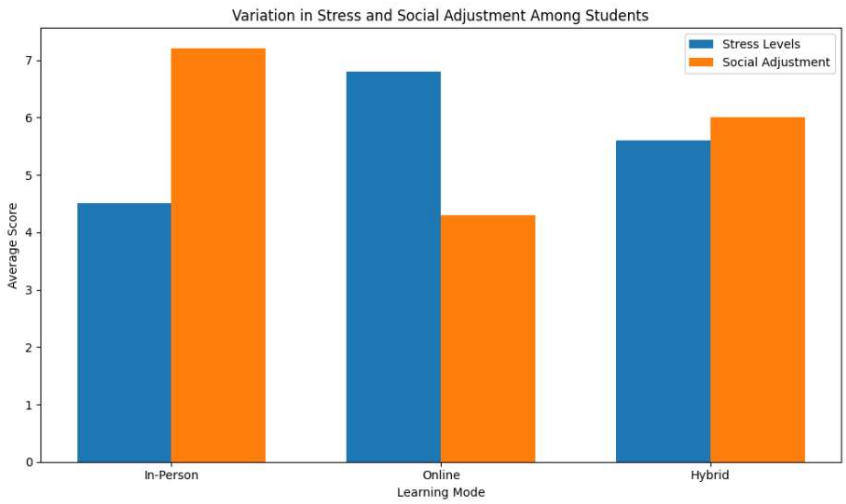

Figure 5: Variation in Stress and Social Adjustment Among Students

Figure 5: A comparison across learning modes reveals clear patterns in the students' emotional and social adjustment to their respective academic environments. The levels of stress are lower among the students attending in-person, combined with the highest level of social adjustment, indicating that face-to-face interaction, structured environments, and immediate peer support contribute to the well-being of the students. The online learners face the highest levels of stress and the lowest levels of social adjustment due to associated factors of isolation, reduced communication with peers, and increased academic pressures associated with learning remotely. Hybrid learners fall in the middle, as they are able to enjoy flexibility yet periodic times of social interaction, but still vulnerable to various stressors related to online components. All in all, variation points toward learning mode as central in shaping students' experiences with stress and their ability to integrate socially within their academic communities.

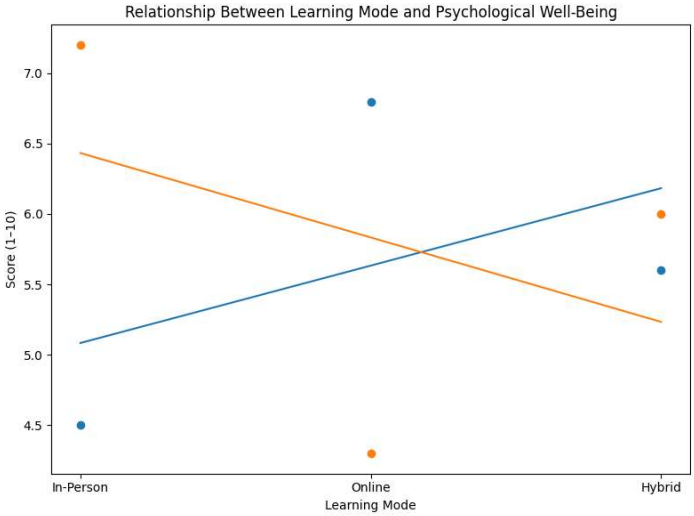

Figure 6: Relationship Between Learning Mode and Psychological Well-Being

Figure 6: The relation between learning mode and psychological well-being is illustrated by sharp contrasts in the ways in which students from different learning modes experience stress and social adjustment. Online learners reported the highest level of stress combined with low social adjustment, hence suggesting that virtual learning settings heighten feelings of pressure, isolation, and loss of peer interaction. Students who attended classes in an in-person learning environment showed lower levels of stress and higher social adjustment, thus indicating that direct social contact, classroom structure, and readily available support have a positive influence on emotional stability. Hybrid learners fall between these poles because they have the benefits associated with flexibility yet still suffer from challenges related to both modes. Generally, the trends seem to indicate that mode of learning significantly influences the mental wellbeing of the students, online learning being most psychologically demanding and in-person learning most supportive.

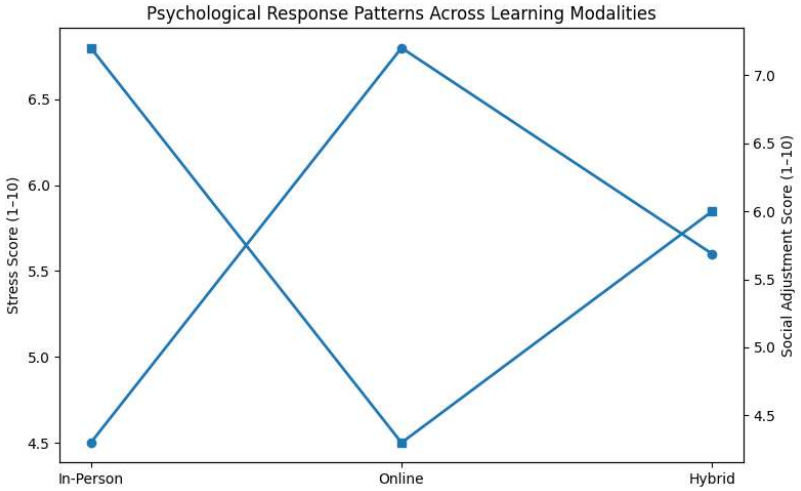

Figure 7: Psychological Response Patterns Across Learning Modalities

Figure 7: The patterns of psychological responses across learning modalities are in sharp contrast to the levels of stress and social adjustment that students face in light of their mode of learning. The in-person learners report the lowest levels of stress coupled with the highest social adjustment, hence confirming that face-to-face environments still inspire emotional stability and good peer relations. Contrasting those are the online learners who face substantially higher levels of stress coupled with reduced levels of social adjustment, an indication of challenges related to digital fatigue, isolation, and reduced interpersonal contact. Hybrid learners fall between the two, benefiting from a balance between flexibility and in-person engagement but still faced by moderate levels of stress and difficulties with social adaptation. Overall, the pattern indicates that modality is strongly influential in shaping students' psychological wellbeing in response to stress and their ability for social integration into academic life.

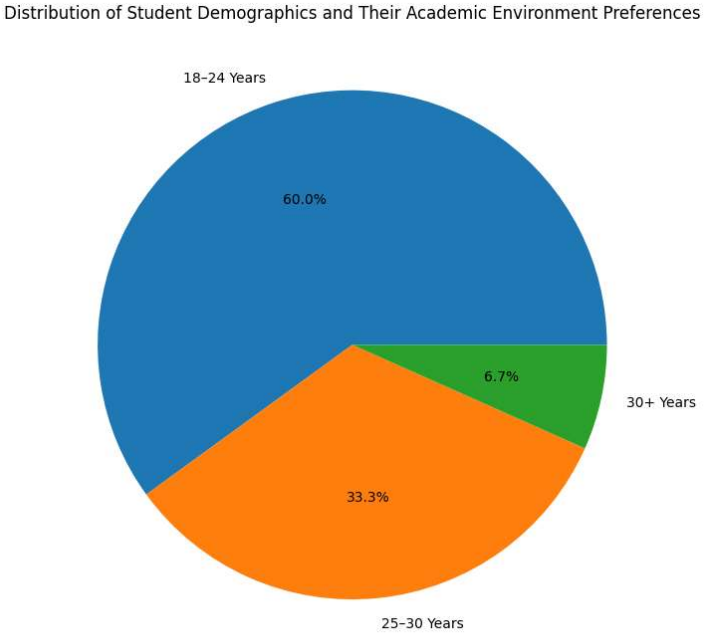

Figure 8: Distribution of Student Demographics and Their Academic Environment Preferences

Figure 8: In the distribution of student demographics and their preferred academic environment, there is a noticeable pattern in composition by age and learning mode preference. Most of the respondents are within the age bracket of 18-24 years, meaning that

the sample consists of mostly traditional college-aged students, followed by smaller segments of individuals aged between 25-30 and an even smaller group over 30. The age group distribution reflects common trends in higher education enrollments. Further, the preferred learning mode among students reflects differences in academic needs and lifestyle differences: some prefer traditional learning in-person because it provides structure and social interaction, while others may prefer online or hybrid models for flexibility and ease. Taken together, demographic and preference patterns provide important context for interpreting students' stress levels and social adjustment across different learning environments.

5. DISCUSSION

The finding would be important in framing an understanding of how learning modalities have become influential in the psychological experience of students, both in their level of stress and their social adjustment. Demographically, a majority fell into the bracket of 18 to 24 years typical in higher education. This high concentration may suggest that the responses are highly representative of traditional college students who, although being more adaptive to changes in technology, are more prone to academic and social pressures.

These findings indeed show that learning modality does have a significant influence on both levels of stress and social adjustment. The in-person learning setting had the lowest perceived level of stress and highest social adjustment among students, underlining the continued centrality of face-to-face interaction for emotional well-being and a sense of belonging. Physical classroom settings provide the opportunity to get immediate peer support, clearer communication, and more structured routines, serving to diminish anxiety and build stronger social integration.

The pattern found in the present study can be explained by both psychosocial and environmental approaches to learning. Learning environments are not only involved in the transmission of academic knowledge but also influence emotional experiences and social interactions. In face-to-face learning environments, structured schedules, immediate feedback, and spontaneous peer interactions are crucial elements in emotional regulation and feelings of security, thus reducing stress and enhancing social integration. In online learning environments, there is a greater need for self-control, digital engagement, and time management, as well as limitations on spontaneous interactions and emotional expressions. This could be the reason why students in online learning environments report higher levels of stress and lower levels of social integration. Blended learning environments occupy an intermediate position, flexible and offering some form of interpersonal contact, but still subjecting students to the psychological demands of digital learning components.

The present study demonstrates that learning modality plays a central role in shaping students psychological well-being and their ability to adjust socially. Students in face-to-face classrooms reported lower stress and better social adjustment, while those studying fully online experienced greater psychological strain and weaker social integration. These patterns are consistent with established psychological theories which emphasize the importance of direct social interaction, structured environments, and immediate feedback in reducing anxiety and fostering a sense of belonging.

The higher stress observed among online learners can be explained through the lens of cognitive load and environmental stress theory. Online learning requires sustained attention, increased self-regulation, and continuous engagement with digital screens, which can mentally exhaust students. In addition, limited informal interaction with peers and teachers reduces emotional support, making it harder for students to cope with academic demands. This combination of academic pressure and social isolation naturally elevates stress levels.

In contrast, students in in-person learning environments benefit from structured routines, peer presence, and spontaneous

interaction, which promote emotional stability and social bonding. From a social learning perspective, regular face-to-face contact strengthens peer relationships and enhances students' sense of belonging, which in turn buffers stress. Hybrid learners showed moderate outcomes, reflecting the dual nature of their learning experience—gaining flexibility from online components while still accessing some level of interpersonal engagement.

6. CONCLUSION

This study investigates how changed learning environments influence the levels of stress students experience and their social adjustment. In fact, these findings reveal that online learners experience increased levels of stress and difficulties in socially adjusting, compared to their counterparts operating under more traditional face-to-face classes. As schools continue to evolve, it is vital that strategies supporting the mental health and social relationships of students be at the forefront. Educators and policymakers should take note of such dynamics in their effort to construct supporting structures that guarantee the overall learning experience will enhance children's ability to intellectually and socially thrive across a variety of educational settings.

The results of this study support the knowledge that learning environments are holistic psychological and social systems, not just educational platforms. With the growing trend of online and blended learning in educational institutions, it is important that attention not only be paid to the educational aspects of learning but also to the emotional and psychological well-being of students. Learning environments that focus on peer engagement, mental health, and learning design are critical to stress reduction and socialization. The recognition of students' psychological and social needs, in addition to educational goals, may help create more sustainable learning environments, especially in institutions where online learning is on the rise.

From the above research, once again it has been proved that learning environments affect not only the level of stress but also social adjustment exhibited by students. Traditional learning patterns positively affect emotional well-being and social integration displayed by students, whereas the psychological and social challenges presented by online learning patterns affect negatively. In blended patterns, there is a balance between positive and negative aspects, but they have to be custom-designed.

LIMITATIONS

However, despite all the contributions, it has to be noted that there are still some limitations in this research. For instance, in this study, there is a sample size of 250 participants, and through this, it is understood that the result of the study cannot be general. There are self-report research methods used in this study, which ultimately leads to the study facing possible biases, considering the fact that the responses acquired might not be indicative of their actual mental conditions.

Furthermore, as it is a cross-sectional study, there are limitations towards drawing a conclusion regarding the differences in stress and levels of social adjustment. The mental experience that the students undergo can differ with respect to periods or terms as well as the investment in gaining learning in online and mixed learning settings. Furthermore, there are limitations with respect to the lack of qualitative features in the current study towards gaining proper insight into the mental experience that students undergo in the learning setting.

SUGGESTIONS AND FUTURE IMPLICATIONS

Educational Suggestions

On the grounds of the results, it has been observed that institutions demand improvement in peer engagement activities in the online and blended learning setting. The activity will be accomplished in group work sessions. Institutions demand developing an effective peer engagement activity in the online setting. This will eliminate the loneliness and pressure to perform academically as well. Institutions demand provision of mental support in terms of stress

management in the online setting. Trainings on the effective mode of teaching via digital technology might also produce effective emotional and social outcomes of students.

Research Suggestions

In further research, physiological measures of stress, such as sleep or heart rate variability, may be added to the criteria alongside the self-reported measures. In comparative studies covering various regions and cultures, there might be interesting discoveries related to whether similar trends are observed in other learning settings too. Longitudinal studies can similarly be conducted on the potential influences of online learning settings on the psychology and social development of students too.

The following study can be extended in a number of important ways: first, longer-term follow-ups of emotional well-being and adjustment need to be carried out, as more extended periods of exposure to evolving modes of learning may indicate shifting patterns of stress responses and social adjustment. The next study might take on an added dimension by complementing self-reported data with physiological indicators of stress, such as heart rate variability, quality of sleep, or cortisol levels. Yet other studies can delve into demographic variables like socio-economic status, digital literacy, and family environment in order to understand how such factors shape students' experiences in dynamic learning contexts. Of especial utility will be the direction of assessing specific interventions aimed at supporting students both in fully online and hybrid environments, including peer mentoring, training in mental health, strategies for digital engagement, and organized social activities. Cross-comparison among educational institutions, countries, and age brackets will help establish whether cultural and institutional differences determine the levels of stress and social adjustment. Finally, instructor practices, technological tools, and curriculum design could be further investigated in an attempt to more fully explicate how learning environments might be optimized to support the well-being of students and create healthier social integration.

Declarations

Availability of Data and Material

The datasets generated and analyzed during the current study, including anonymized questionnaire responses, statistical outputs, and analytical summaries, are included within the manuscript. Additional supporting data may be made available by the corresponding author upon reasonable request. All data were collected exclusively for academic research purposes and are stored securely in compliance with institutional data protection guidelines.

Competing Interests

The authors declare that they have no financial, professional, or personal conflicts of interest that could have influenced the outcomes or interpretation of this research. The study was conducted independently without any external commercial involvement.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. The study was conducted using the institutional resources and academic support provided by Sri Satya Sai University of Technology & Medical Sciences.

Authors' Contributions

Madhumita conceptualized the study, designed the research framework, conducted data collection, performed statistical analysis, and prepared the initial manuscript draft. Dr. Dhiraj Shinde supervised the research process, provided methodological guidance, reviewed and refined the statistical interpretation, and critically revised the manuscript for intellectual content. Both authors reviewed and approved the final version of the manuscript and agree to be accountable for the integrity and accuracy of the work.

Ethical Consideration

The study was conducted in accordance with established ethical standards for educational research. Participation was entirely voluntary, and informed consent was obtained from all participants prior to data collection. Respondents were assured of anonymity and confidentiality, and they were informed of their right to withdraw from the study at any stage without any consequence. The data collected were used strictly for academic research purposes and were stored securely to protect participant privacy.

Acknowledgements

The authors express their sincere gratitude to the Department of Education, Sri Satya Sai University of Technology & Medical Sciences, for providing academic guidance and institutional support. The authors also thank all the students who voluntarily participated in the study and contributed valuable insights to this research.

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Conflict of Interest Statement: *The authors declare that there is no conflict of interest regarding the publication of this paper.*

Generative AI Statement: *The author(s) confirm that no Generative AI tools were used in the preparation or writing of this article.*

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Cite this Article

Madhumita, Dr. Dhiraj Shinde. STRESS AND SOCIAL ADJUSTMENT IN CHANGING LEARNING ENVIRONMENTS. International Research Journal of Engineering & Applied Sciences (IRJEAS). 14(1), pp. 197-216, 2026. https://doi.org/10.55083/irjeas.2026.v14i01015