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Impact of online studies on social development of early adolescent students: A gender-based analysis of social interaction post-COVID-19

¹Charu Nagar and ²Sarita Kumawat

¹Ph.D. Scholar, College of Social Science and Humanities, MLSU, Udaipur, Rajasthan, India

²Professor (Home Science), Meera Girls College, MLSU, Udaipur, Rajasthan, India

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Corresponding Author: Charu Nagar

Abstract

The COVID-19 pandemic significantly disrupted the social lives of students due to prolonged school closures and a shift to online learning. The present study was conducted in Udaipur, Rajasthan and aims to examine the impact of online studies on the social development of early adolescent students, with a specific focus on social interaction after returning to offline schooling. A sample of 300 students (150 boys and 150 girls) was selected using a structured self-developed questionnaire. The data were analyzed using percentage distribution and chi-square tests to identify gender differences. The findings reveal that both boys and girls demonstrated positive social reintegration, with high levels of comfort, confidence, and peer interaction. However, variations were observed in areas such as inclusion in group activities and initiative in forming new friendships. The chi-square analysis indicated a statistically significant gender difference in social interaction ($\chi^2 = 8.021$, $p < 0.05$). The study highlights the resilience of adolescents in re-establishing social connections post-pandemic while emphasizing the need for supportive school environments to enhance social development.

Keywords: Social development, social interaction, adolescents, COVID-19, gender differences, online studies

Introduction

Social development is a crucial aspect of adolescent growth, encompassing the ability to interact effectively with peers, build relationships and participate in group activities. Early adolescence represents a sensitive developmental stage during which peer interaction plays a significant role in shaping emotional well-being, social competence and overall personality development.

The outbreak of the COVID-19 pandemic led to unprecedented disruptions in the education system, with prolonged school closures and a rapid shift to online learning environments. While online education ensured academic continuity, it significantly limited face-to-face interaction among students. Research has indicated that reduced social interaction and increased isolation during the pandemic adversely affected the mental health and social development of adolescents (Loades *et al.*, 2020) [3]. Similarly, Orben *et al.* (2020) [6] emphasized that adolescence is a critical period during which social deprivation can influence emotional regulation and interpersonal behavior.

Global educational bodies have also highlighted the broader impact of school closures on students' social experiences. Reports by United Nations Educational, Scientific and Cultural Organization (2021) [10] and Organisation for Economic Co-operation and Development (2021) [7] indicate that beyond academic loss, students experienced disruptions in peer interaction, collaboration and social skill

development during the pandemic. More recent reports (Organisation for Economic Co-operation and Development, 2023; UNICEF, 2024) [8, 9] further emphasize that rebuilding social connections has become a key priority in the post-pandemic educational landscape.

With the reopening of schools and the return to offline learning, it becomes essential to assess how students readjust to social environments. The ability to communicate with peers, participate in group activities and rebuild friendships reflects the extent of social recovery among adolescents in the post-pandemic context. Recent studies (Allen *et al.*, 2024; Nguyen *et al.*, 2023) [1, 5] further highlight that although adolescents demonstrate resilience in reconnecting socially, variations in interaction patterns and emotional comfort continue to persist.

Furthermore, gender differences in social interaction have been widely documented, with boys and girls often exhibiting distinct patterns in communication, participation and peer relationships. In the Indian context, studies have also indicated that online education has influenced peer interaction and social behavior among school students (Verma & Sharma, 2024) [11]. Therefore, the present study aims to examine social interaction among early adolescent students and to analyze the comparative differences between boys and girls in the post-COVID-19 period. In this context, the present study focuses specifically on social interaction as a key dimension of social development among early adolescents.

Objectives of the Study

- To assess social interaction among early adolescent students.
- To compare social interaction between boys and girls.

Hypotheses of the Study

H₀₁: There is no significant association between gender and social interaction among early adolescent students.

H₁₁: There is a significant association between gender and social interaction among early adolescent students.

Methodology

The present study adopted a descriptive research design to examine the social development of early adolescent students with a focus on social interaction in the post-COVID-19 period. The sample comprised 300 students, including 150 boys and 150 girls, selected through purposive sampling technique. The research was conducted in Udaipur, Rajasthan, across five different government schools. Data

were collected using a self-developed structured questionnaire designed to assess various aspects of social interaction, such as comfort in communicating with peers, participation in group activities, confidence in classroom discussions, inclusion in peer groups and cooperative behavior. The questionnaire consisted of statements measured on a five-point Likert scale i.e., Strongly Agree, Agree, Neutral, Disagree and Strongly Disagree. Data collection was carried out after the reopening of schools and respondents were provided with clear instructions to ensure accurate and reliable responses. The collected data were analyzed using percentage distribution to understand response patterns and the chi-square (χ^2) test was applied to examine gender differences in social interaction. The level of significance was set at 0.05

Results and Discussion

a) Girls

Table 1: Percentage distribution of Social Interaction among Girls (n=150)

S. No.	Social Interaction	S.A.	A	N	D	S.D.
1.	I feel comfortable interacting with my classmates since returning to school after the lockdown.	86.66	8	5.33	0	0
2.	I find it harder to make new friends now than before the COVID lockdown.	0	0	3.33	19.33	77.33
3.	I take part in group activities (like group projects or team games) more often now than I did before COVID.	10	4	70	9.33	6.66
4.	I feel more confident sharing my ideas in class discussions after the lockdown.	68	16.66	12.66	2.66	0
5.	My friends include me in group conversations and activities as much as they did before COVID.	36.66	31.33	8.66	12	11.33
6.	I enjoy talking to classmates during school breaks as much as I used to before the pandemic.	88	10	2	0	0
7.	I feel shy or nervous when talking to classmates now.	1.33	4.66	14	43.33	36.66
8.	I often help classmates during group tasks or assignments.	50.66	34	12.66	2.66	0
9.	My classmates treat me with kindness and respect, just like before COVID.	63.33	34	1.33	0	0
10.	I try to make new friends more actively after returning to school.	0	18.66	66	15.33	0

*S.A.=strongly agreed, A=agreed, N=neutral, D=disagreed and S.D.=strongly disagreed

b) Boys

Table 2: Percentage distribution of Social Interaction among Boys (n=150)

S. No.	Social Interaction	S.A.	A	N	D	S.D.
1.	I feel comfortable interacting with my classmates since returning to school after the lockdown.	82	4	14	0	0
2.	I find it harder to make new friends now than before the COVID lockdown.	0	0	2	10	88
3.	I take part in group activities (like group projects or team games) more often now than I did before COVID.	6	16.66	59.33	15.33	2.6
4.	I feel more confident sharing my ideas in class discussions after the lockdown.	72	6	9.33	8	4.66
5.	My friends include me in group conversations and activities as much as they did before COVID.	52	8	16.66	20	3.33
6.	I enjoy talking to classmates during school breaks as much as I used to before the pandemic.	84	14.66	1.33	0	0
7.	I feel shy or nervous when talking to classmates now.	0	3.33	15.33	16	65.33
8.	I often help classmates during group tasks or assignments.	50	15.33	26	4	4.6
9.	My classmates treat me with kindness and respect, just like before COVID.	59.33	12.66	19.33	8.66	0
10.	I try to make new friends more actively after returning to school.	0	56.66	21.33	22	0

*S.A.=strongly agreed, A=agreed, N=neutral, D=disagreed and S.D.=strongly disagreed

The analysis of social interaction among early adolescent students in the post-COVID-19 period indicates a generally positive trend of social reintegration for both boys and girls. A high proportion of respondents reported feeling comfortable interacting with classmates after returning to school, with girls (86.66% strongly agree, 8% agree) showing slightly higher comfort levels compared to boys (82% strongly agree, 4% agree), although a notable 14% of boys remained neutral.

In terms of forming new friendships, the majority of both girls and boys did not perceive difficulty post-lockdown.

Among girls, 77.33% strongly disagreed and 19.33% disagreed with the statement that making new friends had become harder, while among boys, an even higher proportion (88% strongly disagreed and 10% disagreed) shared this view, indicating minimal impact of the pandemic on friendship formation.

Participation in group activities did not show a marked shift for either group, with a large percentage of respondents remaining neutral (70% girls; 59.33% boys). However, boys (16.66% agree) reported slightly higher active participation compared to girls (4% agree), suggesting a marginal gender

variation in engagement levels. Confidence in sharing ideas during class discussions improved for both groups, with girls (68% strongly agree, 16.66% agree) and boys (72% strongly agree, 6% agree) reporting high levels of confidence. This reflects a positive adjustment in classroom interaction following the return to offline learning.

With respect to inclusion in peer groups, a majority of girls (36.66% strongly agree, 31.33% agree) and boys (52% strongly agree, 8% agree) felt included in group conversations and activities. However, a noticeable proportion of boys (20% disagree) and girls (12% disagree; 11.33% strongly disagree) reported some level of exclusion, indicating that peer group dynamics may still pose challenges for certain students.

Informal social interaction during school breaks remained strong for both groups, with girls (88% strongly agree, 10% agree) and boys (84% strongly agree, 14.66% agree) expressing enjoyment in peer conversations, suggesting resilience in casual social bonding.

In terms of social anxiety, the majority of respondents did not feel shy or nervous while interacting with classmates. Among girls, 43.33% disagreed and 36.66% strongly disagreed, while among boys, 16% disagreed and 65.33% strongly disagreed, indicating relatively higher confidence levels among boys.

Cooperative behavior, as reflected in helping classmates during group tasks, was evident among both groups. A majority of girls (50.66% strongly agree, 34% agree) and boys (50% strongly agree, 15.33% agree) reported actively supporting peers, although a higher proportion of boys (26%) remained neutral.

Regarding peer treatment, most respondents perceived that they were treated with kindness and respect similar to pre-COVID times. Girls (63.33% strongly agree, 34% agree) reported slightly more positive perceptions compared to boys (59.33% strongly agree, 12.66% agree), though a small proportion of boys (8.66%) expressed disagreement.

Finally, when examining efforts to make new friends, girls largely remained neutral (66%), indicating a passive approach, whereas boys showed relatively more initiative, with 56.66% agreeing that they actively try to form new friendships.

Table 3: Gender Difference in Dimensions of Social Development

Social Development Dimension	χ^2 value	p-value	Significance
Social Interaction	8.021	0.018	Significant

*Significant at 5% level of significance

The chi-square analysis further revealed a statistically significant gender difference in social interaction ($\chi^2 = 8.021, p < 0.05$). Therefore, the null hypothesis (H_{01}) was rejected, and the alternative hypothesis (H_{11}) was accepted, indicating that gender has a significant association with social interaction among early adolescent students in the post-COVID-19 period.

Conclusion

The present study examined the social interaction of early adolescent students in the post-COVID-19 period with a focus on gender differences. The findings indicate that both boys and girls have largely adapted well to the resumption

of offline schooling, demonstrating positive social reintegration. A majority of students reported feeling comfortable interacting with peers, enjoying informal conversations and displaying confidence in classroom discussions. However, certain variations were observed between boys and girls. Girls showed slightly higher levels of comfort, cooperation, and perception of peer support, whereas boys demonstrated relatively greater confidence and initiative in forming new friendships. Despite overall positive trends, a small proportion of students in both groups reported feelings of exclusion and neutrality in participation, suggesting that social adjustment is not uniform across all individuals.

The chi-square analysis confirmed a statistically significant gender difference in social interaction, indicating that gender plays an important role in shaping post-pandemic social behavior among early adolescents. Therefore, the null hypothesis was rejected and the alternative hypothesis was accepted. Overall, the study highlights that while adolescents have shown resilience in rebuilding social connections after the pandemic, gender-based differences and individual variations must be acknowledged in understanding their social development.

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