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Role Of Internet Usage In Enhancing Self-Regulated Learning Skills In Secondary School Students

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Abstract

This study explores how internet usage, gender, and locality relate to self-regulated learning among secondary school students. The results indicate that students who use the internet less frequently tend to achieve better academic results and demonstrate stronger self-regulated learning abilities than those with higher internet engagement. Notable variations were also found across gender and locality, with female and urban students displaying higher levels of self-regulated learning compared to their male and rural peers. However, no significant combined effects were found between internet usage and either gender or locality. The outcomes underscore the importance of promoting mindful internet use and developing focused educational interventions to reduce gender and regional disparities in student autonomy and academic success.

Keywords: Self-Regulated Learning, Internet Usage, Gender Differences, Urban-Rural Divide, Secondary Education, Learning Inequality, Digital Habits, Educational Psychology

INTRODUCTION

In a world increasingly shaped by digital advancements, the capacity of learners to independently control and enhance their educational journey is more critical than ever. Self-regulated learning (SRL)—a concept emphasized by scholars like Zimmerman and Boekaerts—refers to the strategic combination of cognitive, motivational, and metacognitive practices that help students manage their own learning effectively. Often, female students are observed to exhibit stronger self-regulation, marked by an awareness of personal learning preferences, strategic application of learning techniques, and continual self-assessment aimed at improvement.

At the same time, the internet has become a powerful medium through which young individuals interact with information and each other. While it offers substantial learning benefits, excessive or emotionally driven use of the internet—comparable to behavioral addiction—has become a concern. Adolescents are particularly susceptible to this dual-edged nature of the internet, which can both support autonomous learning and serve as a source of distraction. This study seeks to understand the dynamic relationship between self-regulation in learning and internet usage within the framework of contemporary education.

SELF-REGULATED LEARNING

Characterizing a self-regulated learner involves understanding more than just the processes they use. Prominent researchers such as Zimmerman (1989), Boekaerts (1999), and Corno (1992) have highlighted the significance of cognitive, motivational, and metacognitive elements in effective learning. Students—especially girls—who are naturally inclined to self-regulate tend to be aware of their strengths and weaknesses as learners and understand the strategies that work best for them. They are adept at choosing the right strategies for specific learning contexts, monitoring their thought processes, managing time efficiently, and evaluating their own progress. According to Heo (2000), such learners take charge of their educational journey and have a strong belief in their ability to succeed. These traits collectively represent the ideal learner profile educators aim to nurture.

INTERNET USAGE

The concept of "internet usage disorder" was introduced by Dr. Ivan Goldberg, likening it to an impulse control issue similar to compulsive gambling, but without the involvement of substances. Many users form emotional bonds with online personas and activities, often engaging in forums, social networks, and digital communities. Others spend considerable time researching interests or blogging.

Internet access among adolescents has surged dramatically in recent years. A 2002 Gallup survey found that adolescents often favor the internet over traditional media such as TV, radio, or even phone calls (Whitlock, Powers, & Eckenrode, 2006). Although young people use the internet for various purposes—including academic tasks, gaming, shopping, and

media downloads (Shen & Shakir, 2009)—its primary appeal remains social interaction (Gross, 2004). Platforms like email, instant messaging, chat rooms, and blogs empower adolescents to communicate and build personalized digital spaces (Greenfield & Yan, 2006). Despite global trends, internet use among Indian adolescents remains relatively limited. Research cited in a special edition of the American Psychological Association (APA) highlights both the positive and negative impacts of frequent internet use on youth's social behavior, emotional well-being, and health (Willenz, 2006).

RATIONALE OF THE STUDY

Most prior studies on internet usage and its impact have been conducted in Western or international contexts, leaving a noticeable gap in research specific to India. There is a scarcity of studies that explore the relationship between internet addiction and self-regulated learning among Indian students. Various factors—including gender, type of school, home environment, parental engagement, geographic location, academic stream, and study routines—are known to influence students' capacity for self-directed learning. Despite this, there is limited empirical research addressing both the individual and combined effects of internet addiction on self-regulated learning in school-aged populations in India. This study aims to address that gap by examining how internet use affects the self-regulation skills of secondary school students, with a particular focus on the Rohtak region.

STATEMENT OF THE PROBLEM

"A Study on the Impact of Internet Usage on Self-Regulated Learning Among Secondary School Students."

OBJECTIVES OF THE STUDY

- To investigate the separate and joint influence of (a) internet usage and (b) gender on the self-regulated learning abilities of secondary school students.
- To explore the primary and interactive effects of (a) internet usage and (b) locality on the self-regulated learning of students at the secondary level.

HYPOTHESES

- Internet usage and gender do not have any significant individual or combined effect on the self-regulated learning of secondary school students.
- Internet usage and locality do not exert any significant main or interactive influence on the self-regulated learning of secondary school students.

DELIMITATIONS OF THE STUDY

The current research is subject to the following limitations:

- The research is limited to learners enrolled at the secondary school level.
- The study sample comprises only 200 students.
- The analysis is centered around two primary variables: internet usage and self-regulated learning.

VARIABLES OF THE STUDY

- **Dependent Variable:**
  - Self-Regulated Learning
- **Independent Variables:**
  - Internet Usage
  - Gender
  - Locality

TOOL USED

- The **Internet Usage Scale** developed by **Saini and Kaur (2017)** was employed.
- The level of self-regulated learning was assessed using the **Self-Regulated Learning Scale** created by **Gupta and Mehtani (2017)**.

RESEARCH DESIGN

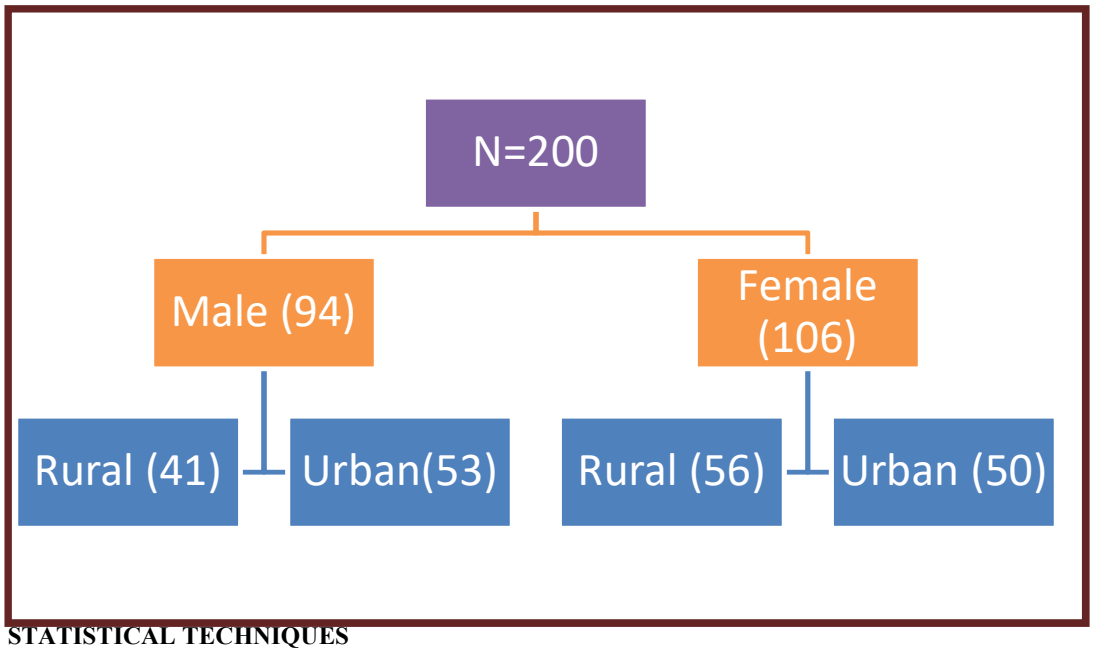
Considering the nature of the present study, the researcher adopted the **descriptive survey method** to effectively address the research objectives. In addition to this, the **case study method** was also utilized, as the investigation focused on the self-regulated learning patterns of secondary school students.

PROCEDURE OF THE STUDY

This study aims to explore self-regulated learning among secondary school students in relation to internet usage and selected demographic factors, specifically gender and locality. The research methodology was carefully designed after a thorough review of relevant literature and previous studies related to these variables. To ensure the significance and relevance of the investigation, the researcher structured the study's procedures based on insights gained from existing research. In alignment with the stated objectives and hypotheses, a sample of 200 secondary school students from Rohtak town was selected for the study.

SAMPLING

The study initially involved a sample of 200 secondary school students, consisting of 94 boys and 106 girls. Among the boys, 41 were from rural regions and 53 from urban settings. In the case of the girls, 56 resided in rural areas, while 50 came from urban locations.



STATISTICAL TECHNIQUES

To compare means and determine the presence of any significant differences, the **Analysis of Variance (ANOVA)** test was employed. In addition, **descriptive statistics** such as **mean, standard deviation, standard error**, and **t-ratios** were calculated based on the independent variables. The levels of significance were set at **0.01 and 0.05**. Data analysis was conducted using **SPSS version 21.0** and **Microsoft Excel 2007**. To assess the assumption of equal variances across groups, **Levene's Test for Homogeneity of Variance** was also applied.

DATA ANALYSIS AND INTERPRETATION

1. To examine the effects of internet usage (categorized as High and Low) and gender (Male and Female) on the self-regulated learning of secondary school students, the researcher first tested the assumption of homogeneity of variance. This step was necessary because the Two-Way (2×2) ANOVA is sensitive to violations of this assumption. Levene's Test was used to assess the homogeneity of variance.

Levene's Test of Equality of Error Variances[a]			
Dependent Variable: **Self-regulated learning**			
F	df1	df2	Sig.
.761	3	112	.518

It is observed that FLevene =0.761 with degree of freedom 3 and 112 (p-value=0.518) which does not fall in the critical region, therefore the investigator retain the null hypothesis H0 (no difference) for the assumption of homogeneity of variance and conclude that there is no significant difference between the four group's variances ($\sigma^2A = \sigma^2B = \sigma^2C = \sigma^2D$). Therefore, it is reasonable to believe that the variances of four groups are homogeneous i.e. the groups are assumed to have equal variances.

1.1 ANOVA with 2×2 Factorial Design for Self-Regulated Learning of Secondary School Students with respect to Internet Usage and Gender

To investigate the main and interaction effects of internet usage and gender on the self-regulated learning of secondary school students, the data were analyzed using a two-way (2×2) factorial ANOVA with a randomized group design. The first independent variable, internet usage (coded as A), was divided into two levels: High (A1) and Low (A2). The second independent variable, gender (coded as B), was categorized as Male (B1) and Female (B2). The means and standard deviations for the different subgroups are displayed in Table (i). Additionally, Table (ii) summarizes the results of the 2×2 ANOVA, highlighting the main and interaction effects of internet usage and gender on the self-regulated learning of secondary school students.

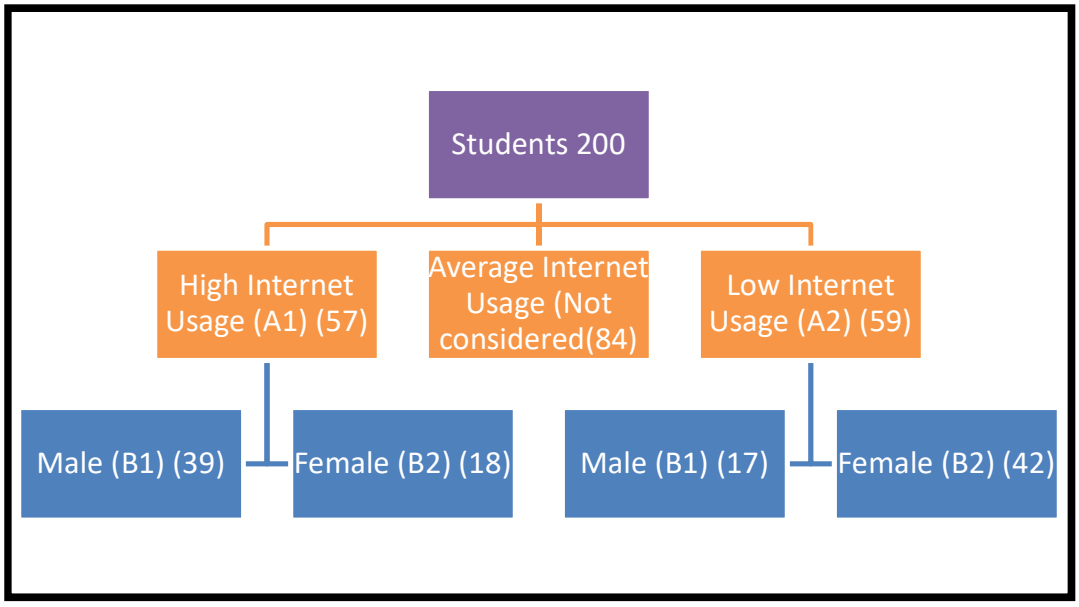


Fig. 1.1(i): Schematic Layout of 2×2 Factorial Design for Self-Regulated Learning of Secondary School Students with respect to Internet Usage and Gender

Table – 1.1(i)
Means and SDs of Sub Samples of 2×2 Design for Self-Regulated Learning of Secondary School Students with respect to Internet Usage [A], and Gender [B]

Internet Usage (A)	Gender (B)	Mean and SD
High Internet Usage (A1)	Male	Mean = 107.94 SD = 28.77
	Female	Mean = 109.66 SD = 13.78
Low Internet Usage (A2)	Male	Mean = 178.64 SD = 23.29
	Female	Mean = 184.23 SD = 23.14

Table- (ii)
Summary of Two Way ANOVA (2x2 Factorial Design) for Self-Regulated Learning of Students with respect to Internet Usage and Gender

Tests of Between-Subjects Effects					
Dependent Variable: SRL					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	159755.041[a]	3	53251.680	95.934	.000
Intercept	2056898.171	1	2056898.171	3705.563	.000
Internet Usage	128812.507	1	128812.507	232.060	.000
Gender	326.078	1	326.078	5.872	.000
Internet Usage × Gender	91.563	1	91.563	.165	.685
Error	62169.399	112	555.084		
Total	2701301.000	116			
Corrected Total	221924.440	115			

a. R Squared = .720 (Adjusted R Squared = .712)

Main Effects of Internet Usage (A), and Gender (B) on Self-Regulated Learning of Secondary School students

Internet Usage (A)

A review of Table (ii) reveals that the F-ratio of 232.060 for the main effect of internet usage on the self-regulated learning of secondary school students is statistically significant at the 0.01 level. This indicates that internet usage has a notable impact on students' self-regulated learning. To further explore these differences, a t-test was conducted to compare the mean self-regulated learning scores between the different internet usage groups. The results of this analysis are presented in Table (iii).

Table (iii)

Mean, Standard value of Self-Regulated Learning of Secondary School Students in relation to their Internet Usage

Groups	N	Mean	SD	't' value
High Internet Users	57	106.92	13.22	22.531**
Low Internet Users	59	185.52	5.08	

****Significant at 0.01 level of significance**

Table (iii) shows that the t-value of 22.531 for self-regulated learning between high and low internet users among secondary school students is significant at the 0.01 level. This indicates that students who use the internet less tend to be more engaged in self-regulated learning compared to their high internet-using peers.

Gender (B)

Furthermore, the table reveals that the F-ratio of 5.872 for the main effect of gender on self regulated learning is significant at the 0.01 level. This suggests that gender plays a significant role in influencing self-regulated learning among secondary school students. To explore this further, a t-test was conducted to examine the differences in self-regulated learning scores across groups based on locality. The findings from this analysis are presented in Table 4.3(iv).

Table (iv)

Mean, Standard value of Self-Regulated Learning of Secondary School Students in relation to their Gender

Groups	N	Mean	SD	't' value
Male students	97	140.56	34.72	**4.478****
Female Students	103	161.92	28.36	

****Significant at 0.01 level of significance**

The table also indicates that the t-value of 4.478 for self-regulated learning between male and female secondary school students is significant at the 0.01 level. This suggests that female students tend to engage more actively in self-regulated learning compared to their male counterparts.

Internet Usage (A) × Gender (B)

Additionally, the F-ratio of 0.165 for the interaction effect between internet usage and gender on self-regulated learning was found to be non-significant at any level. This implies that the combined effect of internet usage and gender does not significantly influence self-regulated learning among secondary school students. Consequently, the null hypothesis H03(a), which states that there is no significant effect of internet usage and gender on self-regulated learning, is rejected for the main effect of internet usage, but retained for both the main effect of gender and the interaction effect between internet usage and gender.

Levene's Test of Homogeneity of Variance

Before examining the effects of internet usage (High & Low) and locality (Rural & Urban) on self-regulated learning, the researcher deemed it necessary to test the assumption of homogeneity of variances. This step is important because Two-Way (2×2) ANOVA is sensitive to unequal variances. Levene's Test of Homogeneity of Variance was employed for this purpose.

Levene's Test of Equality of Error Variances[a]			
Dependent Variable: **Self-regulated learning**			
F	df1	df2	Sig.
.697	3	112	.556

The Levene's test produced an F-value of 0.697 with degrees of freedom 3 and 112, and a p-value of 0.556. Since the p-value is greater than the significance level, it falls outside the critical region. As a result, the investigator-retains the null hypothesis (H_0) of equal .variances. This indicates that there is no significant difference among the variances of the four groups ($\sigma^2\_A = \sigma^2\_B = \sigma^2\_C = \sigma^2\_D$). Therefore, it is reasonable to conclude that the assumption of homogeneity of variance holds, and the variances across the groups can be considered equal.

2.1 ANOVA with 2×2 Factorial Design for self-Regulated Learning of Secondary School Students with respect to Internet Usage and Locality

To examine the main and interaction effects of internet usage and locality on the self-regulated learning of secondary school students, the data were analyzed using a two-way (2×2) factorial ANOVA with a randomized group design. The first independent variable, internet usage (coded as A), was classified into two levels: High (A1) and Low (A2). The second independent variable, locality (coded as C), was divided into Rural (C1) and Urban (C2) categories. A schematic representation of the factorial design for internet usage and locality is shown in Figure 4.4(i). The means and standard deviations of the different subgroups are provided in Table 4.4(i) and illustrated in Figure 4.4(ii). Additionally, Table 4.4(ii) presents a summary of the two-way ANOVA results, highlighting the main and interaction effects of internet usage and locality on self-regulated learning among secondary school students.

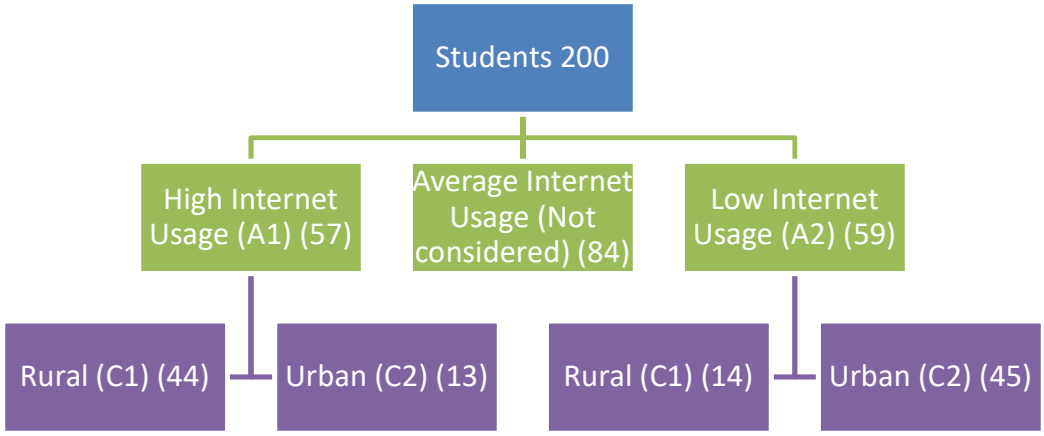


Table –2 (i)

Means and SDs of Sub Samples of 2×2 Design for Self-Regulated Learning of Secondary School Students with respect to Internet Usage [A], and Locality [C]

Internet Usage (A)	Locality (B)	Mean and SD
High Internet Usage (A1)	Rural	Mean = 106.54 S.D. = 28.24
	Urban	Mean = 101.92 SD = 27.36
Low Internet Usage (A2)	Rural	Mean = 186.57 SD = 23.20
	Urban	Mean = 178.91

		SD = 29.06

Table- (ii)
Summary of Two Way ANOVA (2x2 Factorial Design) for Self-Regulated Learning of students with respect to Internet Usage and Locality

Tests of Between-Subjects Effects					
Dependent Variable: SRL					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	164952.336[a]	3	54984.112	76.411	.000
Intercept	1704179.429	1	1704179.429	2368.299	.000
Internet Usage	127538.815	1	127538.815	177.241	.000
Locality	780.464	1	780.464	6.317	.000
Internet Usage × Locality	47.745	1	47.745	.066	.797
Error	80592.905	112	719.580		
Total	2642864.000	116			
Corrected Total	245545.241	115			
a. R Squared = .672 (Adjusted R Squared = .663)					

Internet Usage (A)

A review of Table 4.4(ii) shows that the F-ratio of 177.241 for the main effect of internet usage on self-regulated learning among secondary school students is significant at the 0.01 level. This indicates that internet usage has a significant impact on students' self-regulated learning. To further explore these differences, a t-test was conducted to compare the mean self-regulated learning scores between different internet usage groups. The results of this analysis are presented in Table (iii).

Table (iii)
Mean, Standard value of Self-Regulated Learning of Secondary School Students in relation to their Internet Usage

Groups	**N**	**Mean**	**SD**	**'t' value**
High Internet Users	57	106.92	13.22	
Low Internet Users	59	185.52	5.08	22.531**

****Significant at 0.01 level of significance**

Table 4.4(iii) shows that the t-value of 22.531 comparing self-regulated learning between high and low internet users among secondary school students is significant at the 0.01 level. This suggests that students with lower internet usage demonstrate greater involvement in self-regulated learning compared to their high internet-using peers.

Locality(C)
Furthermore, the table indicates that the F-ratio of 6.317 for the main effect of locality on self-regulated learning is significant at the 0.01 level. This means that locality significantly influences self-regulated learning among secondary school students. To further examine these differences, a t-test was performed to compare the mean self-regulated learning scores between rural and urban groups. The results of this analysis are presented in Table 4.4(iv).

Table (iv)
Mean, Standard value of Self-Regulated Learning of Secondary School Students in relation to their locality

Groups	N	Mean	SD	't' value
Rural students	97	138.74	31.52	
Urban Students	103	164.26	29.94	**5.871****

****Significant at 0.01 level of significance**

The table further shows that the t-value of 5.871 for self-regulated learning between rural and urban secondary school students is significant at the 0.01 level. This indicates that urban students are more actively engaged in self-regulated learning compared to their rural counterparts.

Main Effects of Internet Usage (A), and Locality (C) on Self-Regulated Learning of Secondary School students

Internet Usage (A) × Locality (C)

The table also indicates that the F-ratio of 0.066 for the interaction effect between internet usage and locality on self-regulated learning among secondary school students is not significant at any level. This suggests that there is no significant interaction between internet usage and locality in influencing self-regulated learning. Therefore, the null hypothesis H04(a), stating that there is no significant effect of internet usage and locality on self-regulated learning, is rejected for the main effect of internet usage but retained for both the main-effect of locality and the interaction effect between internet usage and locality.

FINDINGS

Findings on the Effects of Internet Usage, Gender, and Locality on Self-Regulated Learning of Secondary School Students

Based on the t-test results, the following conclusions were drawn:

- Internet usage significantly affects self-regulated learning among secondary school students. Specifically, students with lower internet usage demonstrated greater engagement in self-regulated learning compared to those with higher internet use.
- Gender was found to have a significant impact on self-regulated learning. Female students showed higher involvement in self-regulated learning activities than male students.
- Locality also significantly influenced self-regulated learning, with urban students exhibiting more active self-regulated learning behaviors than their rural counterparts.

Double Interaction Effects of Internet Usage and Gender on Self-Regulated Learning

From the ANOVA test results, it was inferred that:

1. There was no significant interaction effect between internet usage and gender on self-regulated learning.
2. Similarly, no significant interaction effect was observed between internet usage and locality on self-regulated learning.

Educational Implications

1. **Impact of Internet Use:**

- Excessive internet usage can adversely affect students' academic achievement.
- Parents and educators need to be aware of potential risks related to internet use and establish clear guidelines.
- Active supervision and involvement in adolescents' online activities are crucial.
- Professional support should be sought if symptoms of internet addiction emerge.

2. **Effect on Self-Regulated Learning:**

- High internet use is associated with reduced self-regulated learning skills.
- Female and urban students tend to demonstrate stronger self-regulation skills compared to their male and rural peers.
- Educators should emphasize the importance of self-regulated learning as a key factor for academic success.

3. **Support for Rural Education:**

- There is a need to enhance educational infrastructure in rural schools by providing access to libraries, museums, and guest lectures.
- Resources that encourage independent learning should be promoted, especially in rural areas.

Suggestions for Further Research

- Similar studies should be conducted with larger sample sizes across different regions and states to deepen understanding.
- Research could be extended to senior secondary, undergraduate, and university students to allow broader comparisons.
- Inclusion of more districts beyond Rohtak, such as other parts of Haryana or other states, is recommended.
- Studies should incorporate government-aided schools and compare results with government and private institutions.
- Additional variables like parental education, school type, and socio-economic status should be considered.
- Future research might explore distinctions among high, average, and low internet usage groups rather than just high and low categories.

Conclusion

The study concludes that internet usage, gender, and locality have significant effects on self-regulated learning in secondary school students. Students with lower internet usage exhibited higher academic performance and greater self-regulation compared to their high internet-using peers. Female students outperformed males in self-regulated learning, and urban students surpassed rural students in both areas. However, no significant interaction effects were found between internet usage and gender or locality. These findings underscore the importance of promoting responsible internet use and addressing gender and regional disparities to improve educational outcomes.

REFERENCES:

Boekaerts, M. (1999). Self-regulated learning: Where we are today. *International Journal of Educational Research*, 31(6), 445–457. https://doi.org/10.1016/S0883-0355(99)00014-2

Corno, L. (1992). Encouraging students to take responsibility for learning and performance. *The Elementary School Journal*, 93(1), 69–83. https://doi.org/10.1086/461716

Greenfield, P. M., & Yan, Z. (2006). Children, adolescents, and the Internet: A new field of inquiry in developmental psychology. *Developmental Psychology*, 42(3), 391–394. https://doi.org/10.1037/0012-1649.42.3.391

Gross, E. F. (2004). Adolescent Internet use: What we expect, what teens report. *Journal of Applied Developmental Psychology*, 25(6), 633–649. https://doi.org/10.1016/j.appdev.2004.09.005

Gupta, P., & Mehtani, D. (2017). *Self-Regulated Learning Scale*. [Psychometric tool].

Heo, H. (2000). Theoretical underpinnings of self-regulated learning and its implication for web-based instruction. *Proceedings of the International Conference on Computers in Education*. https://doi.org/10.1109/ICCE.2000.888334

Saini, S., & Kaur, S. (2017). *Internet Usage Scale*. [Psychometric tool].

Shen, Y., & Shakir, M. (2009). Adolescents' online activities: Internet use and self-concept. *CyberPsychology & Behavior*, 12(6), 675–678. https://doi.org/10.1089/cpb.2009.0040

Whitlock, J. L., Powers, J. L., & Eckenrode, J. (2006). The virtual cutting edge: The Internet and adolescent self-injury. *Developmental Psychology*, 42(3), 407–417. https://doi.org/10.1037/0012-1649.42.3.407

Willenz, P. (2006). Psychology explores the impact of digital technology on youth. *Monitor on Psychology*, 37(7), 44. American Psychological Association. https://www.apa.org/monitor/julaug06/youth

Zimmerman, B. J. (1989). A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology*, 81(3), 329–339. https://doi.org/10.1037/0022-0663.81.3.329