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Examining the Impact of Focused Study Habits and Distracting Factors (Internet Addiction and Anxiety) on the Mathematics Achievement of Senior Secondary School Students

Swati*
Prof. Neeru Rathee**
*Research Scholar, Department of Education, M.D.University, Rohtak (Haryana)
E- Mail: redchilli.leo@gmail.com
** Professor, Department of Education, M.D.University, Rohtak, (Haryana)

Abstract

The present study was conducted to investigate the influence of selected distracting factors, namely internet addiction and anxiety**,** on the mathematics achievement of senior secondary school students. Mathematics is a vital subject at the senior secondary level, and its achievement is influenced by several psychological and behavioral factors. With the growing dependence on digital devices and increasing academic pressure, it has become essential to understand how such factors affect students' academic performance.

A descriptive survey research design was adopted for the study. The population comprised senior secondary school students studying in recognized schools within Rohtak town (Haryana)**.** A sample of 800 students from Class XI and XII was selected using an appropriate sampling technique. Standardized tools were used for data collection, including the Internet Addiction Scale by Young (1998) and the Comprehensive Anxiety Test by A.K.P. Sinha and L.N.K. Sinha (1971)**.** The academic achievement score in mathematics was taken from students' Class X (CBSE) examination results**.** The collected data were analyzed using statistical techniques such as Mean, Standard Deviation, and ANOVA**.**

The findings revealed that internet addiction had a statistically significant effect on mathematics achievement ($F = 6.08$, $p = 0.0058$), leading to rejection of the null hypothesis. However, anxiety did not show a significant effect on mathematics achievement ($F = 0.399$, $p = 0.8067$), and the null hypothesis was accepted. The study concludes that excessive internet use adversely influences students' mathematics achievement, while anxiety alone may not directly affect academic performance. The findings highlight the need to promote responsible internet usage and strengthen students' focused study habits to enhance mathematics achievement at the senior secondary level.

Keywords : Focused Study Habits, Internet Addiction, Anxiety, Mathematics Achievement, Senior Secondary School Students

❖ Introduction

Mathematics is considered one of the most significant subjects in the school curriculum as it develops logical thinking, problem-solving ability, and analytical reasoning among learners. At the senior secondary level,

mathematics plays a crucial role in shaping students' academic future as it becomes a foundation for higher education and career opportunities in fields such as engineering, science, commerce, and technology. Despite its importance, a large number of senior secondary students face difficulties in achieving satisfactory performance in mathematics. These difficulties are often influenced not only by cognitive factors but also by students' study habits and emotional as well as behavioral challenges.

Focused study habits are essential for achieving success in mathematics because the subject requires regular practice, concentration, time management, and systematic learning. Students who maintain disciplined and effective study routines generally perform better than those who study irregularly or without proper planning. However, in the modern digital era, students are increasingly exposed to various distracting factors that negatively affect their academic engagement. Among these, internet addiction has become a serious concern, as excessive use of smartphones, social media, online gaming, and entertainment content reduces study time, weakens concentration, and increases procrastination.

Along with internet addiction, anxiety is another major factor affecting mathematics achievement. Many students experience anxiety related to examinations, fear of failure, and pressure to perform well, which can lead to lack of confidence, poor retention, and decreased problem-solving ability. Mathematics anxiety, in particular, creates a psychological barrier that prevents students from applying their knowledge effectively during tests and classroom learning.

Therefore, the present study aims to examine the impact of focused study habits and distracting factors such as internet addiction and anxiety on the mathematics achievement of senior secondary school students. Understanding these relationships is important for teachers, parents, and policymakers to develop strategies that enhance academic performance and promote healthier learning habits among students.

❖ Operational Definitions of Keywords

➢ Focused Study Habits

In the present study, *Focused Study Habits* refer to the systematic, regular, and goal-oriented study practices followed by senior secondary school students while learning mathematics. It includes planning study time, maintaining concentration, completing homework, revising regularly, practicing numerical problems, and avoiding interruptions during study.

➢ Distracting Factors

In this study, *Distracting Factors* refer to those psychological and behavioral conditions that reduce students' concentration and learning effectiveness in mathematics. These factors include internet addiction and anxiety, which divert students' attention from studies and negatively influence mathematics achievement. Distracting factors will be assessed using the selected standardized tools.

➢ Internet Addiction

In the present research, *Internet Addiction* refers to the excessive, uncontrolled, and compulsive use of the internet by senior secondary school students for activities such as social media, gaming, videos, and browsing, which interferes with their study schedule, sleep, attention span, and academic performance. It will be operationally measured through the scores obtained on a standardized Internet Addiction Scale.

➢ Anxiety

In this study, *Anxiety* refers to the feeling of worry, tension, fear, and nervousness experienced by senior secondary school students, especially related to academic pressure, examinations, and performance in mathematics. Higher anxiety levels may negatively affect attention, memory, and problem-solving ability.

➢ **Mathematics Achievement**

In the present study, *Mathematics Achievement* refers to the academic performance of senior secondary school students in the subject of mathematics. It will be operationally defined in terms of the marks/grades obtained by the students in their school mathematics examination or achievement test scores, as collected from academic records or administered tests.

➢ **Senior Secondary School Students**

In this study, *Senior Secondary School Students* refer to students studying in Class XI and Class XII in recognized schools. These students generally fall within the age group of approximately 16 to 18 year**s** and are enrolled in the senior secondary stage of education.

❖ Rationale of the Study

Mathematics is a core subject at the senior secondary level and plays a decisive role in shaping students' academic and professional future. Success in mathematics enhances logical reasoning, critical thinking, and problem-solving skills, which are essential for higher studies in science, technology, engineering, commerce, and many competitive examinations. However, mathematics achievement among senior secondary school students often remains unsatisfactory due to various academic, psychological, and behavioral factors. Therefore, it becomes important to identify the key elements that influence students' performance in mathematics.

In the present educational scenario, students are expected to manage heavy academic workloads along with increasing social and technological distractions. Focused study habits such as regular practice, time management, revision, concentration, and disciplined learning routines are considered crucial for understanding mathematical concepts and improving achievement. Students who develop and maintain effective study habits are more likely to achieve better results and gain confidence in the subject. Hence, exploring the role of focused study habits is necessary for promoting academic success. At the same time, distracting factors like internet addiction and anxiety have become major challenges for students' learning and mental well-being. Excessive use of the internet for social media, gaming, and entertainment often leads to lack of concentration, reduced study time, procrastination, irregular sleep patterns, and poor academic outcomes. Along with this, anxiety—especially academic and mathematics anxiety—creates fear of failure, low confidence, and psychological stress, which negatively affect memory, attention, and performance during examinations.

Thus, the present study is significant because it attempts to examine the combined influence of focused study habits and distracting factors such as internet addiction and anxiety on mathematics achievement. The findings of this research will be helpful for teachers, parents, school administrators, and counselors in designing effective academic strategies, guidance programs, and interventions to enhance mathematics performance and promote healthy study behavior among senior secondary school students.

❖ OBJECTIVE

- To study the effect of Internet addiction (High/Low) on Maths Achievement of Senior Secondary School Students.
- To study the effect of Anxiety (High/Low) on Maths Achievement of Senior Secondary School Students.

❖ Hypothesis

- There exists no significant effect of Internet addiction on Maths Achievement of Senior Secondary School Students
- There exists no significant effect of Anxiety on Maths Achievement of Senior Secondary School Students.

❖ Variables

Independent Variables

- Focused Study Habits
- Internet Addiction
- Anxiety

Dependent Variable

- Mathematics Achievement

❖ Research Design and Methods of the Study

➢ Research Design

The present study adopted a **descriptive survey research design**. This design was considered appropriate because it helps in studying the existing conditions and examining the relationship and impact of different variables such as **focused study habits, internet addiction, and anxiety** on the **mathematics achievement** of senior secondary school students. The survey method provides an effective approach to collect quantitative data from a large group of respondents and to analyze the influence of independent variables on the dependent variable.

➢ Method of the Study

The study was conducted using the survey method. Data were collected from senior secondary students through standardized tools and questionnaires to measure their study habits, internet addiction, and anxiety levels. Mathematics achievement was assessed through students' academic scores in mathematics.

➢ Population

The population of the study comprised all senior secondary school students (Class XI and XII) studying in recognized schools located within Rohtak town (Haryana).

➢ Sample and Sample Size

A sample size of 800 senior secondary school students enrolled in senior secondary schools within Rohtak town was determined for the study. The sample included students from Class XI and Class XII, studying in different schools to ensure adequate representation.

➢ Tools Used

- "Internet Addiction Scale by Young (1998)"
- "Comprehensive Anxiety Test by A. K. P. Sinha and L. N. K. Sinha (1971)"
- "Academic achievement score was taken from students' 10th class (CBSE) results."

➢ Procedure of Data Collection

Permission was obtained from school authorities before data collection. The tools were administered to the selected students under standardized conditions. Proper instructions were given to the respondents, and confidentiality was maintained. After collecting the responses, the data were scored and tabulated for statistical analysis.

➢ **Statistical Techniques Used**

To analyze the data, suitable statistical techniques such as **Mean, Standard Deviation, Correlation, and Regression/ANOVA** were used to examine the effect of focused study habits, internet addiction, and anxiety on mathematics achievement.

❖ To study the effect of Internet Addiction on Maths Achievement

Table: Effect of Internet Addiction on Maths Achievement

Internet Addiction (High/Low) X Maths Achievement						
Source of Variation	***SS***	***df***	***MS***	***F***	***P-value***	***F crit***
Between Groups	301	3	100.33	6.08	0.0058	3.24
Within Groups	264	16	16.5			
Total	565	19				

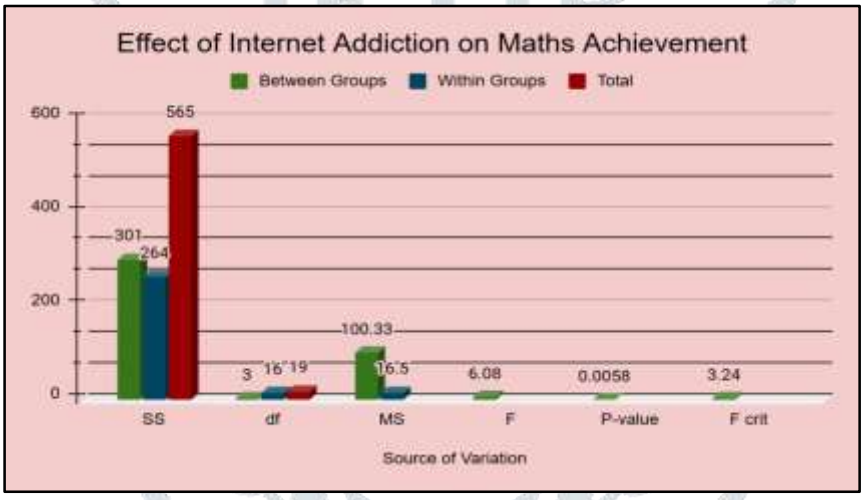


Figure: Effect of Internet Addiction on Maths Achievement

Interpretation: The ANOVA results examine the impact of internet addiction levels (Normal, Mild, Moderate, Severe) on mathematics achievement among senior secondary school students. The F-value is 6.08, and the corresponding P-value is 0.0058, which is less than the significance level of 0.05. This indicates that there is a statistically significant effect of internet addiction levels on mathematics achievement.

The Between Groups Sum of Squares (SS) is 301, accounting for a notable portion of the total variance, while the Within Groups SS is 264, showing residual variation in scores. The F-value exceeding the critical value (F crit = 3.24) confirms the significant differences among the internet addiction categories.

Thus, the null hypothesis, "There exists no significant effect of internet addiction on mathematics achievement of senior secondary school students," is rejected. Students with severe internet addiction are likely to experience significant disruptions in their academic performance due to excessive engagement in online activities, as suggested by Young (1998). This finding aligns with research by Liu et al. (2018), which indicates that higher levels of internet addiction are associated with reduced focus, poorer time management, and lower academic achievement. Mathematics, being a subject requiring concentration and problem-solving, is particularly vulnerable to the effects of internet addiction.

❖ To study the effect of Anxiety on Maths Achievement

Table: Effect of Anxiety on Maths Achievement

Anxiety (Low/High) X Maths Achievement						
Source of Variation	***SS***	***df***	***MS***	***F***	***P-value***	***F crit***
Between Groups	724.4	4	181.1	0.399	0.8067	2.867
Within Groups	9067.6	20	453.38			
Total	9792	24				

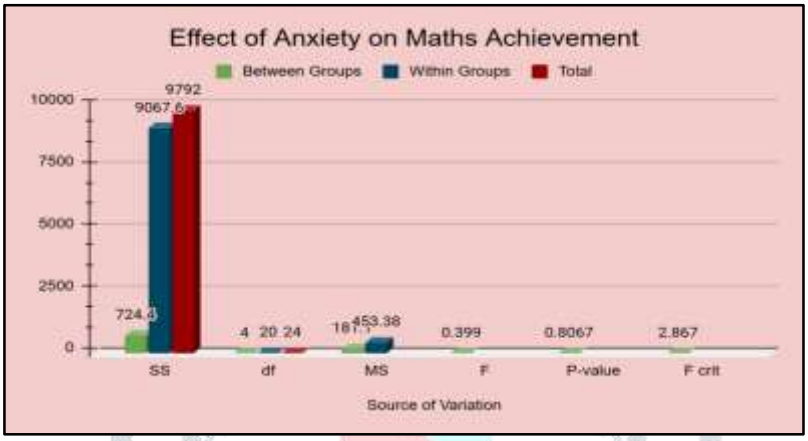


Figure : Effect of Anxiety on Maths Achievement

Interpretation:- The data provided examines the relationship between anxiety and mathematics achievement. The F-value for the groups (anxiety levels: Extremely High, High, Normal, Low, Extremely Low) is 0.399, and the P-value is 0.8067, which is greater than 0.05. This indicates that there is no statistically significant effect of anxiety levels on mathematics achievement.

The Between Groups Sum of Squares (SS) is 724.4, while the Within Groups SS is much higher at 9067.6, reflecting greater variability within the groups compared to variability explained by the anxiety levels. The high error term suggests that a substantial portion of the variability in mathematics achievement remains unexplained by anxiety levels alone.

Based on the results, the hypothesis, "There exists no significant effect of anxiety on mathematics achievement of senior secondary school students," is accepted. These findings imply that variations in anxiety levels—whether extremely high or low—do not significantly influence the mathematics achievement of the students in this sample. While anxiety is often considered a key factor in academic performance, as suggested by studies like Ashcraft and Krause (2007), the current data suggests that other factors such as teaching strategies, personal coping mechanisms, or domain-specific anxieties (e.g., math anxiety) may play a larger role. It also underscores the need to examine broader psychological, environmental, and cognitive factors that interact with anxiety to influence academic outcomes.

❖ Findings of the Study

The major findings of the present study, are presented below:

➢ Effect of Internet Addiction on Mathematics Achievement

The analysis of variance (ANOVA) results revealed that internet addiction has a significant effect on mathematics achievement of senior secondary school students. The obtained F-value (6.08) was found to be greater than the critical value (3.24) and the p-value (0.0058) was less than 0.05**,** indicating a statistically significant difference in mathematics achievement among students with different levels of internet addiction (Normal, Mild, Moderate, Severe).
Thus, the null hypothesis stating that *"There exists no significant effect of internet addiction on mathematics achievement of senior secondary school students"* was rejected**.**
This finding indicates that higher levels of internet addiction negatively influence students' mathematics achievement**,** possibly due to reduced concentration, poor time management, lack of regular practice, and increased academic distraction.

➢ Effect of Anxiety on Mathematics Achievement

The ANOVA results further showed that anxiety does not have a significant effect on mathematics achievement among senior secondary school students. The obtained F-value (0.399) was found to be less than the critical value (2.867) and the p-value (0.8067) was greater than 0.05**,** suggesting that the differences in mathematics achievement across anxiety levels (Extremely High, High, Normal, Low, Extremely Low) were not statistically significant.
Therefore, the null hypothesis stating that *"There exists no significant effect of anxiety on mathematics achievement of senior secondary school students"* was accepted**.**
This result indicates that anxiety alone may not directly influence mathematics achievement in the present sample, and other academic or psychological factors may play a more dominant role in determining performance.

❖ Conclusion

The present study, *"Examining the Impact of Focused Study Habits and Distracting Factors (Internet Addiction and Anxiety) on the Mathematics Achievement of Senior Secondary School Students"*, was conducted to explore how distracting factors like internet addiction and anxiety influence students' achievement in mathematics. The findings of the study revealed that **internet** addiction has a statistically significant effect on mathematics achievement of senior secondary school students. Students with higher levels of internet addiction were found to have comparatively lower mathematics achievement, indicating that excessive and uncontrolled internet use disrupts students' academic focus, reduces study time, and affects regular practice, which is essential for learning mathematics.

On the other hand, the study showed that anxiety does not have a significant effect on mathematics achievement of senior secondary school students. This implies that variations in anxiety levels (extremely high to extremely low) were not found to create notable differences in mathematics performance among the students included in the study. Therefore, it may be concluded that anxiety alone may not directly predict mathematics achievement, and other factors such as study habits, teaching-learning methods, motivation, and individual coping strategies might have a stronger influence.

Overall, the study concludes that internet addiction is an important factor influencing mathematics achievement**,** and controlling it can help improve students' academic performance.

❖ Educational Implications

The findings of the present study have important implications for teachers, parents, school administrators, and educational planners:

- **Need for Digital Discipline:** Since internet addiction significantly affects mathematics achievement, schools and families must promote responsible and limited internet usage among students.
- **Role of Teachers:** Mathematics teachers should motivate students to develop regular practice, concentration, and problem-solving habits, as mathematics requires continuous engagement.
- **Guidance and Counselling:** Schools should strengthen counselling services to help students manage internet dependency, time misuse, and academic distractions.
- **Parental Monitoring:** Parents should monitor students' screen time and guide them towards balanced digital habits and healthy routines.
- **School-Based Awareness Programs:** Awareness programs on the harmful effects of excessive internet use can help students understand the academic consequences of internet addiction.
- **Supportive Learning Environment:** A positive classroom environment and supportive teacher-student interaction may help students improve confidence and interest in mathematics.

❖ Recommendations

Based on the findings of the study, the following suggestions are recommended:

- **Reduce Excessive Internet Use:** Students should be encouraged to limit unnecessary use of social media, games, and entertainment platforms, especially during study hours.
- **Time Management Training:** Schools may conduct workshops on time management, effective study planning, and concentration-building techniques.
- **Promote Focused Study Habits:** Students should be guided to follow disciplined study routines such as daily revision, practice of numerical problems, and structured study schedules.
- **Introduce Digital Detox Practices:** Regular "no-phone study hours" at home and in school can improve focus and enhance academic performance.
- **Counselling for Students:** Students showing severe internet addiction should be provided counselling support to overcome dependency and improve learning behavior.
- **Teacher-Parent Collaboration:** Teachers and parents should work together to track students' academic progress and regulate distractions affecting studies.
- **Healthy Lifestyle Encouragement:** Students should be motivated to maintain healthy sleep patterns, physical activity, and relaxation habits to improve mental health and learning efficiency.
- **Further Research:** Future studies may include additional variables such as motivation, self-efficacy, learning environment, and mathematics anxiety for deeper understanding of mathematics achievement.

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