EFFECT OF INTERNET USAGE ON THE ACADEMIC ACHIEVEMENT OF SECONDARY STUDENTS

Abstract

This study investigates the effect of internet usage on the academic achievement of secondary school students under the West Bengal Council of Secondary Education (WBCSE), focusing on variables such as gender and academic classes (IX and X). Using a purposive sampling method, the researcher selected 100 students from Classes IX and X at a school in Contai and administered an internet usage questionnaire. The study tested several null hypotheses using the Pearson product-moment correlation coefficient and independent sample t-test. Results showed no significant difference in internet usage and academic achievement between male and female students. It was also found that Class IX students used the internet more than Class X students, suggesting that lower internet usage is linked to higher academic achievement.

Keywords: *Academic Achievement, Internet Usage, Effect, Secondary Students.*

Introduction

In the present scenario, internet dependence is increasingly evident across various aspects of life, including education. The internet, representing the largest repository of human knowledge ever assembled, is extensively utilized by students and educators for teaching and learning purposes (Castells, 2010). It has been shown to positively influence academic performance by providing access to a vast array of resources and facilitating better educational outcomes (Khan, 2017).

However, the potential for excessive internet use presents significant concerns for parents, schools, and the community. Research indicates that excessive internet usage can lead to difficulties in maintaining a regular daily routine, adversely affect school performance, and strain family relationships (Andreassen et al., 2016). Additionally, excessive internet use is associated with various health issues, including physical problems such as poor posture and eye strain, as well as mental health issues like anxiety and depression (Young, 2009). These adverse effects underscore

the need for balanced and mindful internet usage to ensure it remains a beneficial tool for academic and personal development.

History of Internet

The history of the Internet traces back to the development of early networking protocols and technologies. Initially, the ARPANET, the precursor to the modern internet, used the Network Control Program (NCP) as its primary networking protocol. However, in 1983, NCP was replaced by the Transmission Control Protocol/Internet Protocol (TCP/IP), a suite of protocols developed by Robert Kahn, Vinton Cerf, and their colleagues. This transition marked the beginning of TCP/IP's widespread adoption, which remains the dominant network protocol globally (Kahn & Cerf, 1985).

By 1990, the ARPANET was decommissioned and succeeded by the NSFNET (National Science Foundation Network), which expanded the scope and reach of networked communication (Leiner et al., 2009). In 1995, Tim Berners-Lee, a pioneering computer scientist, introduced the World Wide Web, along with key technologies that underpin it today, such as Hypertext Markup Language (HTML), Hypertext Transfer Protocol (HTTP), Uniform Resource Locators (URLs), and web browsers (Berners-Lee, 1995). These innovations significantly shaped the internet as we know it.

The Uses of the Internet

The internet, as a technological innovation, represents the most extensive collection of human knowledge ever assembled, facilitating faster communication, interaction, social organization, and problem-solving across global communities (Castells, 2010).

- **Access to Information**: One of the primary functions of the internet is its ability to disseminate information rapidly, which supports various awareness campaigns and enables widespread access to knowledge (Mossberger, Tolbert, & McNeal, 2008).
- **Communication**: The internet has revolutionized communication by providing alternatives to traditional methods such as handwritten letters. Platforms like email, Skype, WhatsApp, Facebook, and Messenger have become integral to daily interactions (Pew Research Center, 2015).

- **Education and Self-Improvement**: The advent of online courses and workshops has expanded opportunities for education and personal development, offering flexible learning options that cater to diverse needs (Allen & Seaman, 2013).
- **Electronic Newspapers and Magazines**: The internet serves as a source for up-to-date information, including breaking news, weather, and sports, through digital newspapers and magazines (Newman et al., 2020).
- **Social Networking**: Students use the internet to connect with friends, family, and stay updated on current events through social networks. Popular platforms include Facebook, Twitter, and Instagram, though many other networks also exist (Smith, 2013).
- **Job Searching**: The internet facilitates job searching by connecting users with job opportunities through numerous websites and mobile applications available in various countries (Bureau of Labor Statistics, 2021).
- **Online Shopping**: E-commerce has grown significantly, with platforms like eBay and Amazon providing a wide range of products for online purchase, enhancing convenience and accessibility for consumers (Laudon & Traver, 2020).
- **Entertainment**: The internet offers extensive entertainment options, including video and computer games, which allow individuals to play online with friends and players from around the world (Vasalou et al., 2008).

Disadvantages of the Internet

While the Internet offers numerous advantages, it also presents several notable disadvantages that users should be aware of:

- **Extra Expenses**: Despite many services being offered "for free" online, users often incur additional costs through increased electricity bills from constant use of electronic devices and internet services (Zickuhr & Smith, 2013).
- **Social Disconnect**: The internet's convenience can lead to social isolation, as individuals might become more engrossed in online activities and less engaged with real-world

interactions, which can negatively affect their social relationships and mental well-being (Turkle, 2011).

- **Unhealthy Lifestyle**: The sedentary nature of prolonged internet use contributes to physical health issues such as weight gain and poor posture. Additionally, excessive screen time can strain the eyes and lead to vision problems (American Academy of Pediatrics, 2016).

- **Personal Information Risks**: Online shopping and other internet activities pose risks to personal information security. Users may become victims of identity theft or financial fraud if their personal data is compromised (Furnell & Clarke, 2012).

- **Pornography Exposure**: The accessibility of explicit content on the internet can negatively impact children and adolescents. The ease of access makes it challenging for parents to monitor and control their children's exposure to inappropriate material (Wolak, Mitchell, &Finkelhor, 2007).

- **Account Hacking**: Online accounts are vulnerable to hacking, especially if devices are lost or stolen. Unauthorized access to personal accounts can lead to significant financial losses and privacy breaches (Nash & Kumer, 2018).

- **Misinformation**: The prevalence of false information on the internet can mislead users. Many websites and channels publish inaccurate news to attract attention, making it essential to rely on verified and secure sources (Pennycook & Rand, 2018).

Academic Achievement

Academic achievement refers to the measurable success an individual attains in their educational endeavors, encompassing the knowledge and skills acquired in various subjects. It is often evaluated through assessments and tests designed by educators or institutions, which gauge a student's understanding and proficiency in specific areas (Harris, 2011). Academic achievement is crucial as it serves as a criterion for selection, promotion, and recognition in both academic and professional settings (Crocker & Wolfe, 2001).

Defined broadly, academic achievement involves reaching standards of excellence and demonstrating success in educational tasks. It is not solely about attaining high grades but also about the intrinsic motivation to excel and achieve mastery in challenging situations. This motivation is deeply rooted in the basic psychological and biological needs of students, driving them to surpass their peers and achieve personal and academic goals (Deci & Ryan, 2000). The pursuit of academic excellence often fosters a sense of pride and satisfaction, reflecting the individual's commitment to their educational growth and performance (Zimmerman, 2000).

In summary, academic achievement is a multifaceted concept that encompasses both objective measures of performance and subjective experiences of success and mastery. It plays a significant role in shaping students' educational trajectories and is a central focus for educators aiming to support students' growth and development.

Factors of Academic Achievement

In recent years, there has been growing awareness among parents and students about the significance of academic achievement. Many believe that poor performance in examinations can adversely affect a student's future success. Consequently, students are expected to excel in various school activities to meet standard expectations.

Several factors contribute to individual differences in academic achievement, including intelligence, personality traits, parental influence, classroom instruction, and physical activity. Intelligence and personality traits are closely linked to academic success. Research has shown that students with higher IQs and those who score high in conscientiousness, which relates to effort and achievement motivation, tend to perform better academically (Robinson & Shaver, 1973). Additionally, mental curiosity, as measured by intellectual engagement, significantly impacts academic achievement beyond just intelligence and conscientiousness (Sternberg, 2003).

Parental academic socialization plays a crucial role in shaping a child's academic skills, behavior, and attitudes. This influence is often affected by the parents' socio-economic status. Educated parents typically create a more stimulating learning environment, which can positively impact their child's academic performance (Hill & Tyson, 2009). The values, expectations, and resources provided by parents contribute significantly to academic outcomes.

Classroom instruction also plays a vital role in student achievement. Teachers influence academic success through their instructional methods, expectations, and assessments. Effective teaching involves presenting material in a comprehensible manner and engaging students in meaningful learning experiences. When instruction is poorly delivered or lacks engagement, students may struggle to meet expected levels of achievement (Hattie, 2009).

Moreover, physical activity has been shown to enhance academic performance. Regular exercise increases neural activity in the brain, leading to improved executive functions such as attention span and working memory. These cognitive benefits are associated with better academic outcomes (Hillman, Erickson, & Kramer, 2008).

In summary, academic achievement is influenced by a combination of cognitive, environmental, and behavioral factors. Understanding these elements can help educators, parents, and students create conditions that support academic success.

Statement of the Problem

The present study examines the relationship between internet usage and academic achievement among male and female students from rural areas in West Bengal. This research aims to explore how internet usage impacts the academic performance of secondary school students and to analyze the relationship between various factors, such as gender and academic grade levels (IX & X).

By investigating these variables, the study seeks to provide insights into how internet usage may influence students' academic outcomes and whether the effects differ based on gender or academic class.

Objectives of the Study

The objectives of the present study are as follows:

1. To identify internet usage among secondary school students.
2. To identify the level of academic achievement of secondary school students.
3. To compare internet usage of secondary students with respect to different categorical variables like gender, and academic classes (IX & X).

4. To identify the relationship between internet usage and academic achievement of secondary school students.

Hypotheses of the Study

The hypotheses of the present study are as follows:

1. Ho1: There is no significant difference between male and female secondary student with respect to their internet usage.
2. Ho2: There is a significant difference between male and female secondary students with respect to their academic achievement.
3. Ho3: There is no significant difference between 9^{th} and 10^{th} grade students with respect to their internet usage.
4. Ho4: There is no significant relationship between internet usage and academic achievement of secondary school students.

Rational of the Study

The rationale behind this study is grounded in the significant impact that internet usage has on students and educational institutions. As social networking sites and online resources have become increasingly popular, the internet is now an integral part of students' daily lives. The pervasive use of the internet among students presents both opportunities and challenges for academic performance.

Institutions can leverage this trend by investing in enhanced internet facilities to support academic growth and improve student outcomes. Evidence suggests that strategic use of internet resources can lead to better academic performance and more effective learning experiences (Jiang, 2015). For instance, access to high-quality online educational tools and platforms can facilitate personalized learning and provide students with valuable resources that complement traditional classroom instruction (Zhang & Zhang, 2018).

However, the internet potential for distraction is a significant concern. It is well-documented that excessive internet use, particularly on social networking sites and for recreational purposes, can lead to time wastage and negatively impact academic achievement (Junco, 2012). Research indicates that students who spend excessive time online may experience diminished academic

performance due to reduced study time and increased procrastination (Rosen, Carrier, & Cheever, 2013).

This study aims to provide a comprehensive analysis of how internet usage affects academic achievement, offering insights into how students can maximize the benefits of internet resources while minimizing potential drawbacks. By understanding these dynamics, educational institutions can implement strategies to enhance internet facilities and develop programs that encourage productive online behavior among students.

Delimitation of the Study

The present study is delimited to the following aspects:

- The sample was selected only from the District of Purba Medinipur of West Bengal.
- The sample constituted only secondary school students.

Review of Literature

The effect of internet usage on academic achievement has been the subject of extensive research, revealing diverse outcomes across different educational levels and contexts. Bikram Maiti (2017) examined the impact of internet usage on the academic performance of higher secondary students in West Bengal under the WBCHSE. By administering an internet usage questionnaire to 138 Class XI students selected through purposive sampling, Maiti employed Pearson's product-moment correlation coefficient and independent sample t-test to test his hypotheses. The results indicated a negative relationship between internet usage and academic achievement, suggesting that higher internet usage could detract from students' academic performance. This finding aligns with concerns about potential distractions associated with excessive internet use.

Contrastingly, Muhammad Musaud Asdaque (2010) explored the broader implications of internet usage on the academic performance, social life, and outdoor activities of university students in Pakistan. While the study highlights the impact of internet usage on various aspects of students' lives, it underscores the need to understand the correlation between internet use and social life among university students. However, the study falls short of establishing a direct link between internet usage and academic performance, leaving a gap in understanding how social and academic aspects interplay.

Dr. G. Suri and S. Sharma (2012) investigated the influence of internet access and weekly usage rates on self-learning activities, communication, group activities, and information collection tasks among students. Their findings demonstrated a significant positive relationship between internet usage and these factors, highlighting the constructive role of the internet in supporting educational activities. This study provides a counterpoint to Maiti's findings by suggesting that structured and purposeful internet use can enhance academic outcomes through improved learning and communication skills.

Mashhor and Saad (2014) focused on the prevalence of internet addiction among secondary school students in Riyadh and its correlation with depression. Their results indicated that internet addiction has detrimental psychological, physical, and social effects on adolescents, necessitating preventive and therapeutic interventions. This study introduces the critical dimension of mental health, illustrating how excessive or maladaptive internet use can negatively influence overall well-being, which in turn may impact academic performance.

Mahantil and B. Chandra (2016) analyzed internet dependency among undergraduate students, examining variations in internet use patterns based on gender, field of study, and residence. Their findings revealed that while internet use patterns differed by gender and study stream, residence had no significant effect. The study emphasizes that internet dependency is influenced by individual characteristics, which may further affect academic outcomes.

M.A. Jibrin, M.N. Musa, et al. (2017) investigated the effects of internet usage on the academic performance of students in tertiary institutions in Niger State, Nigeria. The research identified the internet as a beneficial tool in academic exercises within the ICT era, underscoring the positive role that the internet can play in supporting educational pursuits when used appropriately.

Dr. Arshad Hossain (2018) explored the influence of ICT on the academic achievement of students at Holy Child Senior High School in Cape Coast. The study specifically examined how ICT enhances academic achievement, the alternative uses of ICT/internet facilities, and its effects on students' moral behavior. Hossain's findings highlight the dual-edged nature of ICT, where the internet serves as a valuable educational resource but also poses risks to students' moral conduct if not regulated effectively.

Finally, Franklin Adjoa Yebowaah (2018) investigated the impact of internet use on senior high school students in the Wa Municipality. The study concluded that internet access positively influences academic achievement, suggesting that when students use the internet primarily for academic purposes, it can enhance their educational outcomes.

In inference, the reviewed studies present a complex picture of the relationship between internet usage and academic achievement. While some studies highlight the potential negative impacts of excessive internet use, others demonstrate the benefits of structured and purposeful internet engagement. The varied findings underscore the importance of context, the nature of internet use, and individual differences in shaping the outcomes of internet usage on students' academic performance. These insights suggest that balanced and regulated internet use is crucial to harness its potential benefits while mitigating the associated risks.

This study reviews several empirical investigations into the impact of internet usage on students' academic achievement. The literature indicates that students predominantly use the Internet for communication, followed closely by accessing information. There are notable differences in internet usage patterns between boys and girls, with gender significantly influencing how the internet is used. Overall, internet access has been found to positively affect students' academic performance, social life, and outdoor activities.

However, excessive internet use can lead to negative outcomes, potentially impairing cognitive functions, learning, academic achievement, and overall work-life balance.

The Internet offers a broad spectrum of benefits, including social connectivity, entertainment, and access to academic and scientific information. While the educational and communicative use of the internet positively correlates with academic success, recreational use tends to negatively impact academic outcomes. This dual effect highlights the complexity of internet usage and its varied implications on student achievement.

In light of these findings, this research aims to explore the specific effects of internet usage on the academic achievement of secondary school students, particularly focusing on identifying the nuanced influences of different types of internet activities. By addressing these aspects, the study seeks to fill existing gaps in the literature and provide a clearer understanding of the conditions

under which internet usage can either support or hinder academic success among secondary school students.

Methodology

Research Design: In the present study, a quantitative approach has been adopted due to its specific advantages and alignment with the nature of the research. A descriptive survey design was selected to conduct the study. This method of investigation aims to describe and interpret existing conditions, practices, needs, attitudes, and beliefs as they currently exist. The descriptive survey approach allows for a systematic examination of the variables under study, providing a comprehensive overview of the phenomena related to int This adaptation ensures that the tool is culturally and linguistically appropriate for the target population in the study.

Sampling Technique: The present study includes a sample of 100 students from one government school in Contai, located in the Purba Medinipur district of West Bengal. The sample considers various strata, such as gender and class, to ensure adequate representation of these aspects. The students were selected using convenience sampling techniques, specifically purposive sampling, to meet the study's requirements and objectives.

Variables of the Study: The present study includes one independent Variable that is internet usage and one dependent variable namely academic achievement. Besides a number of moderator variables considered for the study namely:

A) Gender: Male (30), Female(70).

B) Class : IX(50), X(50).

Tools of the Study: The tools employ distinctive ways of describing and quantifying data to carry out the research work the following questionnaire tools have been used to collect the data from the sample subject. In the present study, the researcher utilized an edited and modified version of the Internet Usage Scale for Students, originally developed by Shaloo Saini (Jalandhar) and Dr. Parminder Kaur (Hoshiarpur). The modified scale consists of 20 items and has a high-reliability coefficient of 0.91, indicating strong internal consistency. The scale employs a quantitative scoring method based on a five-point Likert scale, which allows for the assessment of various levels of internet usage among students. The academic score for each student in the study was determined

by taking the total percentage of marks obtained in their final examinations of the previous classes, specifically Classes VIII and IX. This approach provided a standardized measure of academic achievement, allowing for the analysis of the relationship between internet usage and academic performance among the students.

Procedure of Data Collection: The researcher collected data from Jukiveri Matangini Vidyapith in Contai, Purba Medinipur district of West Bengal. The data collection involved administering a 20-item questionnaire to the students. The researcher provided clear instructions on how to complete the questionnaire and assisted any students who had difficulty understanding specific items. Adequate time was allocated to ensure that students could read, comprehend, and respond to the questionnaire in an objective manner. This approach ensured that the data collected was both reliable and valid.

***Techniques of Data Analysis*:** The statistical package for the social science (SPSS) version 17.0 program was used to analyze the data. The response was coded numerically and was then input into SPSS 17.0. correlation studies were employed to determine the relationship among the variables under study. Descriptive statistics, independent sample t-test, and Pearson's coefficient of correlation were calculated for multiple comparisons among variables statistically and subsequently, to test the null hypothesis. The details of the statistical analysis used for the whole sample and the corresponding result along with their interpretation are given in the following sections.

Results and Discussion

Table 1- Descriptive Statistics for the Scores of Internet Usage

Scale	N	Range	Minimum	Maximum	Mean	Std Deviations	Skewness	Kurtosis
Internet Usage Scale	100	57.00	32.00	89.00	56.2100	11.20001	.541	.263

The descriptive statistics of internet usage show that the mean score is 56.2100 with a standard deviation of 11.20001 and the range is 357.00 (minimum score is 32.00 and maximum score is 89.00). The calculated skewness is .541 indicatinga positive skew and the kurtosis value is .263 which is also positive.

Table 2.Descriptive Statistics of the Score of Academic Achievement

SCALE	N	RANGE	MINIMUM	MAXIMUM	MEAN	STD DEVIATIONS	SKEWNESS	KURTOSIS
Academic Achievement Scale	100	57.00	32.00	89.00	60.1070	14.47167	.005	-.885

The descriptive statistics of the academic achievement show that the mean score is 601070 with a standard deviation of 14.47167 and a range of 57.00, (minimum score is 32.00 and maximum score is 89.00). The calculated skewness is .005 indicating positive skewed and the kurtosis value is -.885 indicating Leptokurtic.

Hypotheses Testing and Analysis through Independent Sample T- Test

Ho1: There is no significant difference between male and female secondary school students with respect to their internet usage:

Table 3. Testing of Null Hypotheses Ho1

TESTING OF HYPOTHESIS	INDEPENDENT VARIABLE	N	GENDER	MEAN	SD	df	t VALUE	REMARKS
Ho1	Internet Usage	30 70	Male Female	51.4667 58.2429	12.40337 10.06707	46.141	-2.642	(p=.134)

From the table, the result of the independent sample t-test reveals that the calculated t value -2.642 for Ho1is not significant at o.o5 levels. So, the null hypothesis is not rejected.

Ho2: There is no significant difference between male and female of secondary school students with respect to their academic achievement.

Table 4. Testing of Null Hypotheses Ho2

TESTING OF HYPOTHESIS	INDEPENDENT VARIABLE	N	GENDER	MEAN	SD	df	t VALUE	REMARKS
Ho2	Academic achievement	30 70	Male Female	61.1967 59.6400	14.20496 14.66088	56.567	.497	(p=.914)

From the above table, the result of independent sample the test reveals that the calculated value for Ho2 is not significant at the 0.05 level. So, the null hypothesis is not rejected.

Ho3: There is no significant difference between 9th and 10th grade students with respect to their internet usage.

Table 5. Testing of Null Hypothesis Ho3

TESTING OF HYPOTHESIS	INDEPENDENT VARIABLE	N	CLASS	MEAN	SD	df	t VALUE	REMARKS
Ho3	INTERNET USAGE	50 50	X IX	53.5200 58.9000	8.65728 12.79549	86.089	-2.462	(p=0.031)

Form the above table, the result of independent sample t test revels that the calculated value for Ho3 is significant at 0.05 levels. So, the null hypothesis is rejected.

Ho4: There is no significant relationship between internet usage and academic achievement of secondary school students.

Hypothesis Testing and Analysis Through Pearson's Coefficient of Correlation and Spearman Correlation:

Table 6. Testing of Null Hypothesis Ho4

		Academic Achievement	Internet Usage
Academic Achievement	Pearson Correlation	1	-.030
	Sig(2-Tailed)		.769
	N	100	100
Internet usage scale	Pearson Correlation	-.030	1
	Sig(2-Tailed)	.769	
	N	100	100

		Academic achievement	Internet usage
Academic Achievement	Pearson Correlation	1.000	-.002
	Sig(2-Tailed)		.984
	N	100	100
Internet Usage Scale	Pearson Correlation	-.002	1.000
	Sig(2-Tailed)	.984	
	N	100	100

The coefficient of correlation between internet usage and academic achievement is -.030. It indicates that the relationship between the variables is slightly negative. This means that an increase in internet usage leads to poor results in academic achievement and vice versa.

Major Findings of the Study

Following the data analysis and interpretation, the results of the study on various dimensions are summarized as follows:

- There is no significant difference in internet usage between male and female secondary students.
- There is no significant difference in academic achievement between male and female secondary students.
- A significant difference in internet usage is observed between 9th and 10th-grade students, with 9th-graders using the internet more frequently than 10th-graders.
- A significant relationship exists between internet usage and academic achievement among secondary school students.

Suggestion & Recommendation for Future Study

The present investigation opens avenues for further research on the relationship between internet usage and academic achievement. The following suggestions are offered for future studies:

- The study could be replicated in various districts across West Bengal, as well as in different states of India, to determine whether the findings are consistent or vary across different regions.
- Given that the current study focused on a representative sample of students predominantly from rural secondary schools, it is recommended that similar research be conducted in urban and semi-urban areas to provide a broader perspective.
- The research was limited to secondary school students; thus, extending similar studies to other educational levels, such as primary, higher secondary, undergraduate, and postgraduate students, could yield valuable insights into the effects of internet usage on academic performance across different stages of education.

Conclusion

A substantial body of literature has consistently highlighted a positive and significant relationship between internet usage and academic achievement among secondary school students. However, the findings of the present study do not fully align with this consensus. The data revealed no significant differences between male and female students in terms of their internet usage and its impact on their academic performance, suggesting that gender does not play a defining role in this context.

Interestingly, a notable distinction emerged when comparing students across grade levels. The results indicate that 9th-grade students tend to use the internet more frequently than their 10th-grade counterparts. This disparity in internet usage patterns points to an inverse relationship between internet usage and academic achievement, particularly as students advance toward more critical academic years. The reduced internet usage observed among 10th-grade students could be attributed to the increased academic pressure and focus on exam preparation, which in turn correlates with improved academic outcomes.

These findings raise important questions about the role of internet usage in the academic lives of secondary school students. While the internet can serve as a valuable educational tool, its overuse, especially among younger students, may hinder academic progress. Further research is needed to explore the underlying factors contributing to these trends and to determine how internet usage can be optimized to enhance academic success.

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