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An Empirical Assessment of the Internet Usage Pattern and Academic Development of Students In the Murshidabad District of West Bengal

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Abstract: It is known that the internet can be a vehicle for education and development with universal accessibility. The acceptance of online education has successfully disrupted the conventional framework of classroom teaching and delivers knowledge anywhere and everywhere to those who seek it at the click of a button. However, when discussing mass education, the classroom teaching and learning format will remain the tried and tested model of training and holistically developing young minds. Again, considering the potential of online education and training it brings us to the pursuit of optimizing the process of gaining knowledge by hybridizing it. We are encouraging students to access knowledge online along with classroom teaching. So, how effective is this hybridized process of learning? Our paper attempts to find a quantifiable correlation between the extent of this online learning process's contribution to the overall academic development of graduate and postgraduate students from the Murshidabad district of West Bengal, India. It also attempts to indicate aberrant internet usage patterns in the students that may directly or indirectly affect their goal of studentship.

Key Words: Empirical Assessment, online education and training, hybridizing process of learning, quantifiable correlation of academic development, aberrant internet usage pattern, studentship goal.

1. Introduction:

"Internet Addiction (IA) use is affecting society in general and youth and adolescence in particular. Indeed they are the most resourceful segment of the population".

We all may agree with the above statement, but it is difficult to prove when it is pointed out.

IA is defined as excessive internet usage that often characterizes users' functional impairment, withdrawal and negative repercussions (Jeong, Suh, & Gweon, 2019). The present paper discusses the impact of internet use on mental health and its further impact on academic performance.

We will investigate how **internet usage patterns and students' academic development are related.** Studying students (Karim & Chaudhary, 2012) may be meaningful because most of them are digital natives (Jeong, Suh, & Gweon, 2019) and have a high rate of internet access with mobile ownership. However, it isn't easy to assess how Internet Usage Patterns (IUP) affect the overall development of the student. Thus, in this case, we have attempted to understand the factors related to internet use that may impact the student's academic growth in our study. Academics are a significant cause of stress for students. Non-professional and non-academic IUP may cause precipitation and aggregation of these stress factors. For example, disruptive sleep patterns may cause class absenteeism and poor academic performance.

2. Literature Review:

The internet media is now a readily accessible source of information of various kinds. It is said that anything and everything can be found over the internet if you are capable and up to see it. Over the years, the possibilities of internet use have been glamorized by movies like 'Matrix', 'You've Got Mail" etc. Excessive internet use develops poorly controlled behaviour, often leading to depression (Aziz, Wal, & Bhalla, 2020). It is human nature to be inclined towards enjoyment and relaxation without some minimal impetus to work hard. With the advent of Web 2.0, which facilitates social networking characterized by instant communication with the help of images, videos, and text, it incorporated information technology with routine practices of people of all age groups and became the norm. Such behaviour first provides control of technology, and sometimes, overuse and non-professional use develop technological slavery (Aziz, Wal, & Bhalla, 2020) among users. Adolescents tend to be more prone to distraction, leading to ignoring academics and developing the bad habit of procrastination. IA often negatively influences its users' brain development and cognitive

functions (Jeong, Suh, & Gweon, 2019). Many studies using the 'Young Internet Addiction Test' (YIAT) were able to establish the positive correlation between internet usage and the daily routine of the students(Ngai, 2007); students suffering from IA spent longer Time online compared to non-addicts with an average of 18 hours/week (Yadav, Banwari, Parmar, & Maniar, 2013). Among pathological internet users, non-professional internet use is at a higher rate, significantly decreasing their grade level in the study (Bayraktar & Gün, 2007). There is a strong association between internet abuse and poor academic achievement (Stavropoulos, Alexandraki, & Motti-Stefanidi, 2013). Other studies have similar findings on internet use and academic achievement (Schumacher & Nicholas, 2020). A study that relates internet use and poor academic performance reveals that 14% of the total sample agrees that their school work is negatively affected due to internet use. The academic impairment is four times higher in the internet-dependent groups. In the academically impaired subgroup, 405 students reported that their internet use kept them awake late at night, which badly affected their academic performance (Kubey, Lavin, & Barrows, 2001). Another study found that daily use of the internet can favour educational outcomes, but the use of social networks should be limited to avoid bad learning outcomes (Ladrón de Guevara Rodríguez, Lopez-Agudo, & Prieto-Latorre, 2022).

Contrary to the previous studies (studies in the first decade and first half of the second decade of the first century), because of the incorporation of the new applications in smartphones and desktops, new studies (most studies suggested positive outcomes with some limitations; however few studies found the negative impact of internet use) suggested a positive outcome of the internet use in learning and students performance. A study using the machine learning algorithm in the students of China shows that behaviour discipline while using the internet plays a significant role in academic success. Using the perspective of spending hours online, the results show that internet usage data is capable of differentiating and predicting student academic performance (Xu, Wang, Peng, & Wu, 2019). It has been reported that a lack of digital readiness among the university staff is the cause of concern for students' fraternity; an inefficient cyber library and internet connectivity issue discourages using e-resources for study. Students perceived that a good internet facility and e-resources enables for broad scope of learning (Apuke & Iyendo, 2018). The Internet also improves students' academic self-confidence, self-reliance, and student-professor connectedness (Alshahrani, Ahmed, & Ward, 2017). Using smartphone applications and tablets was also helpful and had positive academic performance results. Students have a strong attitude towards mobile learning but are willing to adopt it (Brinz-Ponce, Pereira, Carvalho, Juanes-Mendez, & Garcia-Penalvo, 2017).

The main difficulty in relating problematic internet use (PIU) to academic performance is the difficulty in finding out the factors responsible for problems with internet use that lead to poor academic performance. Even though it is difficult to point out exactly how overuse of the internet may adversely affect students' academic performance of students but various findings regarding the effect of overuse of the Internet on psychological health indicate that overuse is bound to have some adverse impact on the incumbent's psychological, social or physical health. According to the American Psychological Association-'Psychological health is characterized by (1) a reasonable and continuous finding of satisfaction in one's living; (2) utilization of a problem-solving mode of behaviour; and (3) the ability to perceive one's environment with relative freedom from "need distortion" (Jahoda, 1953). Various resources indicate that the prevalence of internet addiction varies between 0.3 to 38%, with a young male predominance. Psychologists and psychiatrists are still not sure whether to categorize Internet addiction as an ailment since treatment lags firm evidence. The mode of treatment is through antidepressant medications, behavioural therapy, psychotherapy, yoga or a combination of the said methods. The American Psychiatric Association has recommended the inclusion of internet addiction in the Diagnostic and Statistical Manual of Mental Disorders fifth edition as an appendix. It is a cautious approach, but it accepts the problem (Chakraborty K, 2010).

Students falling into the adolescent and youth age group are vulnerable since they are driven by inquisitiveness and impulse. Accessing internet-supported devices for entertainment and pleasure is one of the main reasons for repeating this specific behaviour again and again, which increases the chances of addiction manifolds. Addiction is "compulsive, uncontrollable dependence on a substance, habit, or practice to such a degree that cessation causes severe emotional, mental, or physiological reactions" (Louis Leung, 2012)

Numerous studies have linked problematic internet use and internet addiction to hurt the psychological health of the incumbent. Studies have indicated that internet addiction is associated with high tolerance towards compulsive use of the internet and has various withdrawal symptoms like withdrawal from family, school, health and social activities. It was evident that not all activities carried out over the internet have the same effect on the user; for example, someone carrying out academic activities and active learning may not be easily addicted, but activities like internet gaming, entertainment or pornographic materials may have a higher tendency of captivating user attention and tendency towards the addiction. Constant research is being carried out and implemented on how to influence the minds of people through actively or passively passing on information to influence their attitude and behaviour towards a product, a person, any group or an organization by weaving a net of virtual information around the target person or group of people to extract favourable outcome. Even though this seems beneficial, the questionable ethics and misuse of technology are significant threats to this unscrupulous use or misuse. Neuromarketing is based on subconsciously influencing people's choices to change their

attitude towards products by carefully tweaking the keywords used in various advertisements and using software and algorithms to carry out highly targeted and customized ad exposures. It is like invisible machinery continuously filtering information that can reach any person. On the one hand, even though it makes the search and find process over the internet easier on the ethical dimension, the machine working in the background does not know when to stop filtering the information or sending the targeted information. This kind of exposure makes adolescents and young people highly vulnerable. A prevalent example would be the poisoning of the minds of people and hate campaigns through misinformation in social media.

A popular Hindu news media report recently published interesting research by doctors from NIMHANS on 'Problematic Internet Use' (PIU). "The aim of the study was 'Examining Internet usage behaviours, problematic Internet use (PIU) and its association with psychological stress among adolescents', and findings were published in the Indian Journal of Social Psychiatry early in October 2021 (Yasmeen, 2021). The doctors who carried out the research said that a substantial portion of adolescents were affected by PIU. It could impede their academic progress and adversely impact their psychological health. It could impair career goals and emotional or intellectual growth, hindering skill development. Thus, early detection of PUI among adolescents and timely intervention is the key to prevention and a healthy and productive life. The report states, "Although there are substantial studies on PIU, there is no established understanding of the various pathways leading to PIU among adolescents. This emergent problem among adolescents acquires a crucial status, as establishing the determinants of PIU is the first step toward planning prevention and intervention programs, the study stated" (Yasmeen, 2021). Psychological stress manifests in various forms that create disabilities and disruptions to the normal flow of development. WHO (World Health Organisation) has indicated that globally, one in seven 10-19-year-olds experiences a mental disorder, accounting for 13% of the global disease burden in this age group. It has listed anxiety, depression and behavioural disorders common among adolescents. Suicide among adolescents is the fourth most prominent cause of death. Failure to address adolescent mental health issues may cause lifelong disabilities, limiting opportunities for fulfilling lives as adults.

A recent report published by the Telegraph online said that over a quarter of adolescents aged 13 to 17 years spend six hours or longer per day on smartphones or digital devices, according to a nationwide survey. Based on responses from 9,633 parents from 287 districts, the survey found that 28% of children spend six hours or longer, and 34% between three and six hours on digital devices. Another study by community medicine specialists from the Maulana Azad Medical College, New Delhi, published earlier this year, found mobile phone addiction in 33 per cent of a sample of 266 children aged 10 to 18 in the city (Mudur, 2022).

3. Statement of the Problem:

Research Question: How do internet usage patterns correlate with students' academic development ***in the Murshidabad district of West Bengal?***

4. The objective of this research study is as follows:

- To investigate the pattern of internet usage among students and find out their levels of addiction.
- To investigate whether the internet usage pattern affects the student's academic development.

5. Scope of the Study:

- The study has been conducted in Murshidabad district of West Bengal.
- This study involves students pursuing BALLB and MBA courses in AMU Centre, Murshidabad, WB, India.

6. Research Methodology:

Design:

- Primary data was collected from students using an online questionnaire, and the responses were collected through Google Forms.
- It was a 2 part questionnaire. One consisted of a standardized IAT (Internet Addiction Test) question; the other asked about internet usage habits.
- Secondary data was collected from various relevant sources.

Sampling plan and analysis:

- **Type of sampling procedure used-** Convenience and simple random sampling.
- **Selection of sample size-** The questionnaire was distributed online in class groups of around 300 students, out of which 92 students responded by filling out the questionnaire.
- **Methods of analysis-** Using Google Analytics and MS Excel to visualize the data, quantitative analysis was carried out.

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- **Statistical tools Tools Used**:
- **Python/R** (Pandas, SciPy, StatsModels) for regression/correlation.
- **Excel** for descriptive stats and visualizations.
- **Chi-Square/ANOVA** for categorical analysis.

7. ANALYSIS:

7.1 Visual Analysis:

The first part related to the (IAT) questions:

Findings:

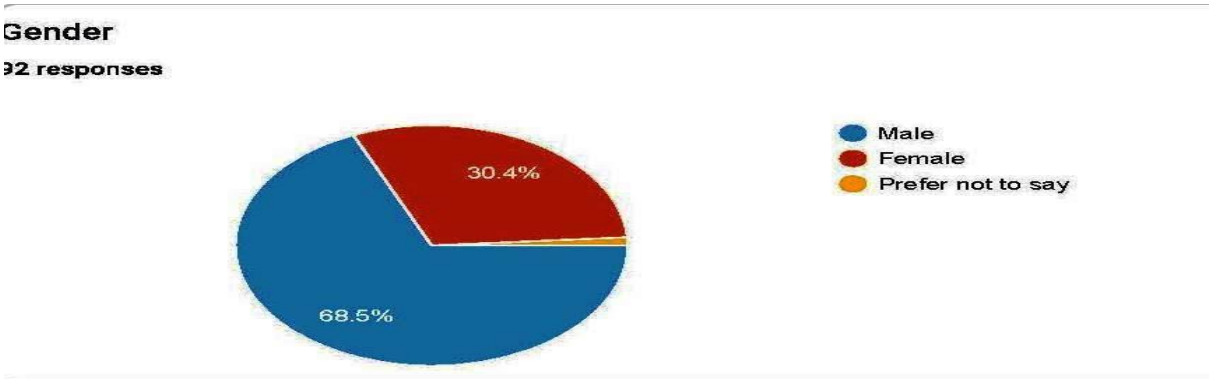
Analysis	Numbers in each group	Percentage of Addiction Levels
A=	**2**	**2.173913043**
MoA=	**12**	**13.04347826**
MiA=	**38**	**41.30434783**
NA=	**40**	**43.47826087**

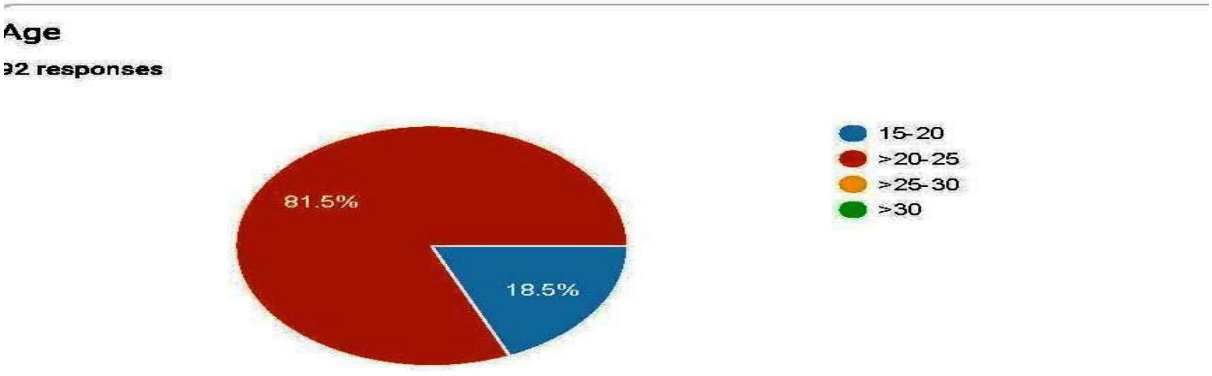
A (Addicted); **MoA** (Moderately Addicted); **MiA** (Mildly Addicted); **NA** (No Addiction)

The second part related to the internet usage habits:

Findings:

The responses collected through the online questionnaire have revealed interesting results for the ongoing study. The total number of targeted respondents was ninety-two, of which 68.5% were male, 30.4% were female, and 1.1% did not reveal their identity.





According to the survey results, more than 80% of the respondents belong to age groups older than 25 years, while only 18.5% are between 15-20 years old. This indicates that the age composition of the respondents is not very diverse, as most of the college students typically fall within the available age group.

The following question displays the profiles of students admitted to undergraduate and postgraduate programs. The research design initially targeted three programs, but only students from the BALLB and MBA programs showed interest in participating. Unfortunately, no students from the B.Ed. program responded to the questionnaire.

Out of the total respondents, the majority (62%) are from the MBA program, while the remaining 38% are from a law background. Nowadays, it is a well-known fact that internet use has become ubiquitous, and students, in particular, are

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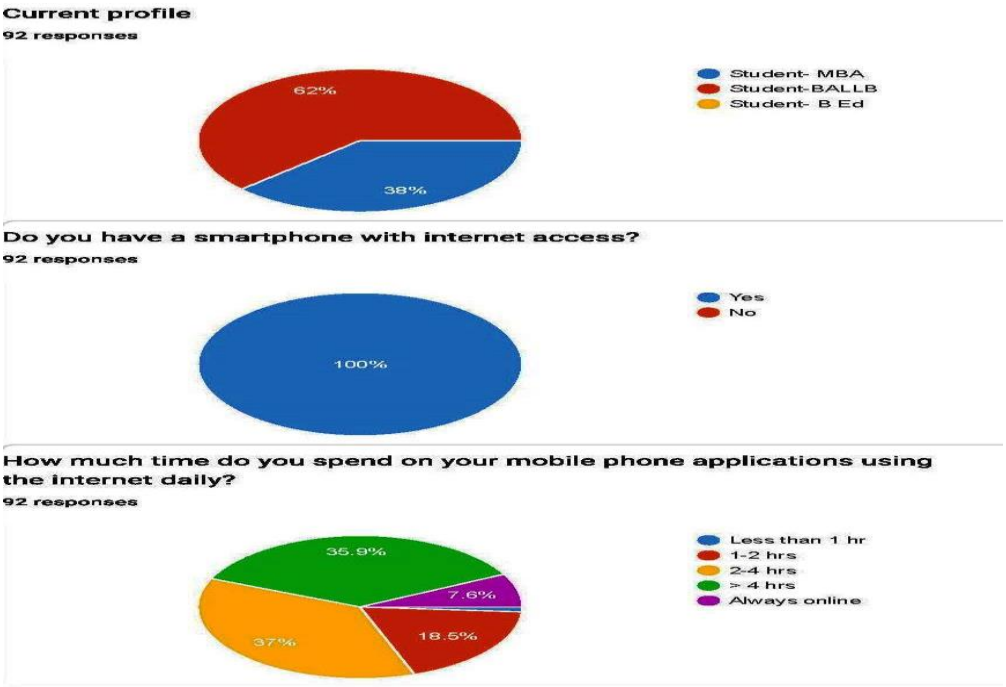
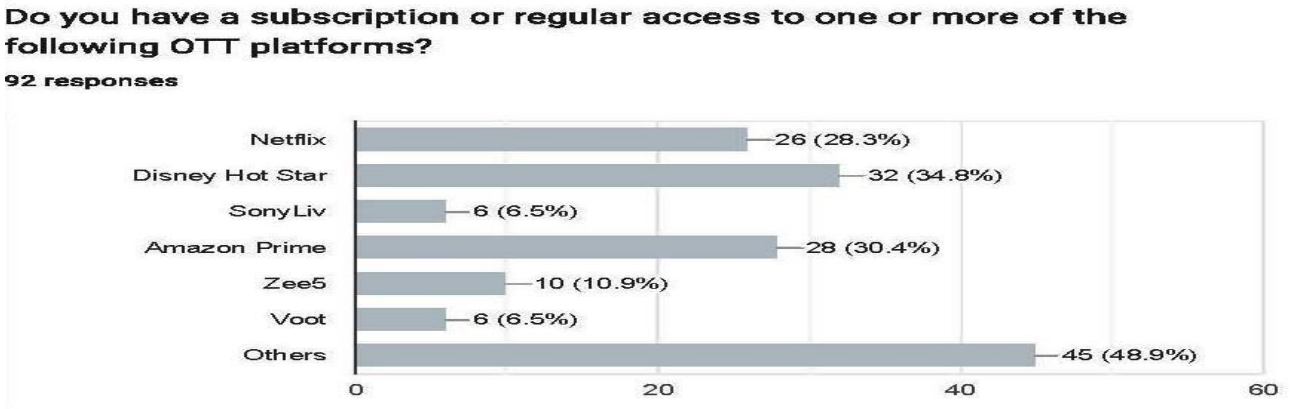
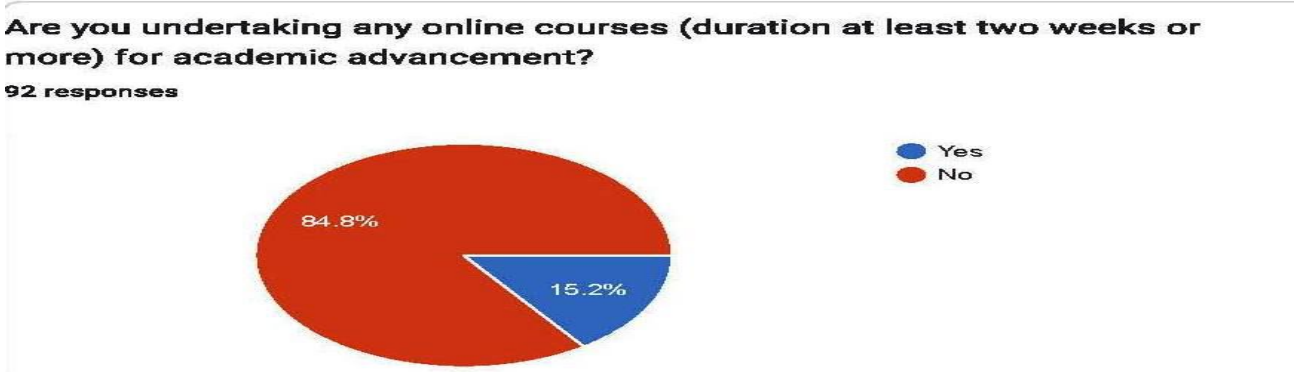
avid users of it. This is further supported by the presented data, which shows that all targeted respondents have smartphones with internet access.



As internet use increases in various ways, people become more attached to the emerging OTT (Over The Top) platforms. According to recent data, most respondents have subscribed to Disney Hot Star, Amazon Prime, and Netflix. Other platforms, such as Sony Liv and Voot, have fewer subscribers. In addition to using OTT platforms, around 15% of the respondents are also interested in online courses for academic advancement. These three questions reveal different patterns of internet usage, which can be interpreted as the respondents' interests.





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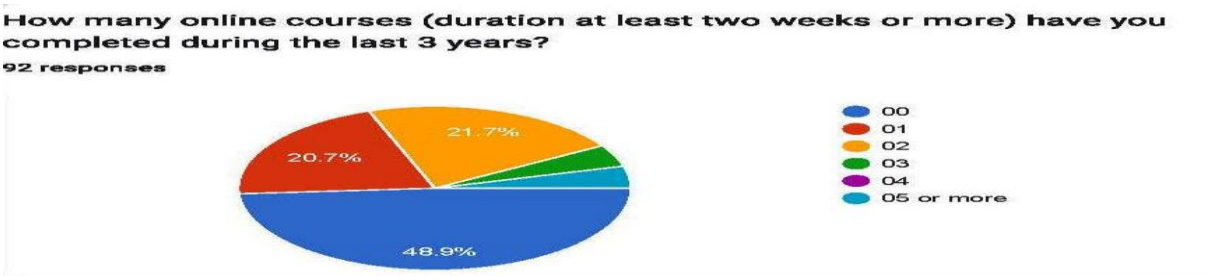
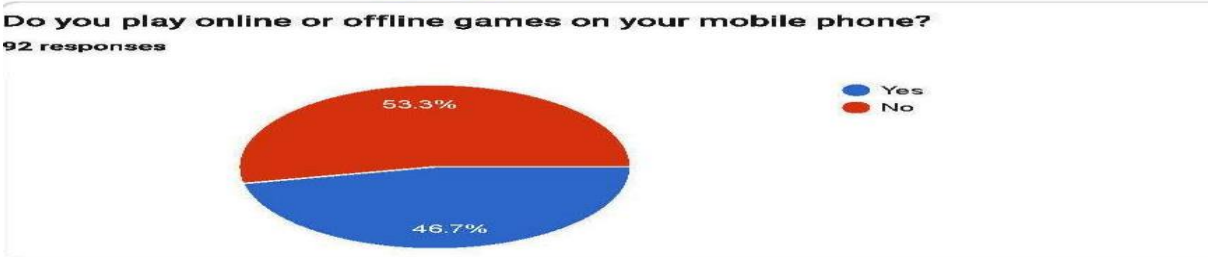
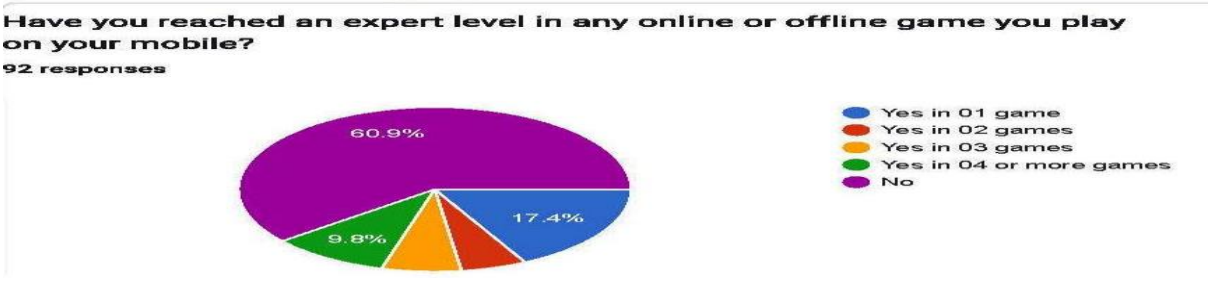
Please write the names of the courses. (If none write NIL)
2 responses

NIL
Nil
No
Judiciary
NIL
MBA
Constitutional law by NALSAR
MOOTING AND ADVOCACY AMU CM
Paathshala classes
BALLB
Ma economics
MS Excel
Digital marketing
Financial Markets
Project Management by Google
EXCEL
Advanced Aerodynamic
N/A
Nil
Ca foundation

Most respondents answered negatively about completing online courses in the past three years. Only 20.7% of respondents completed one online course, while 21.7% completed two.



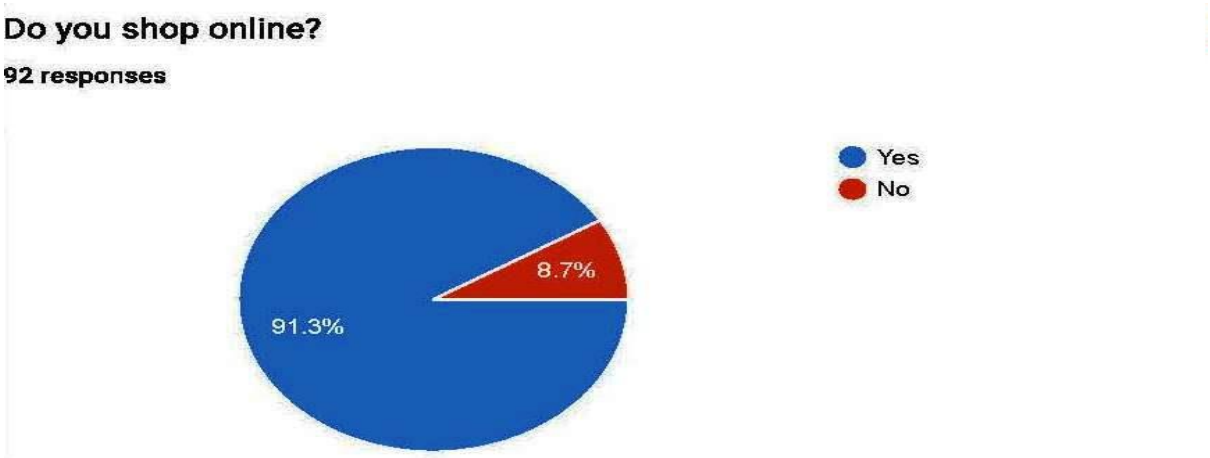


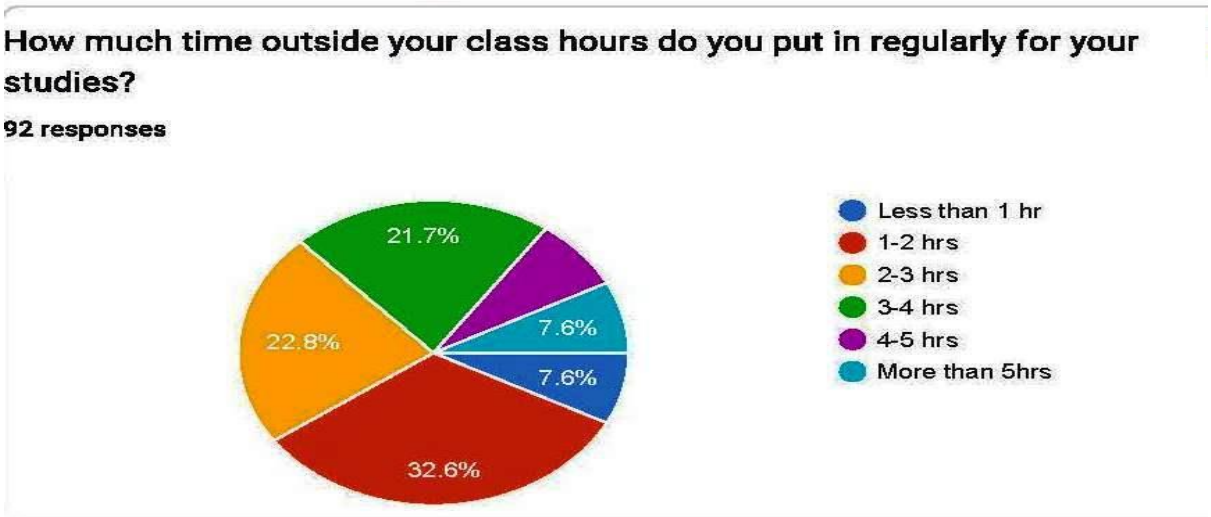


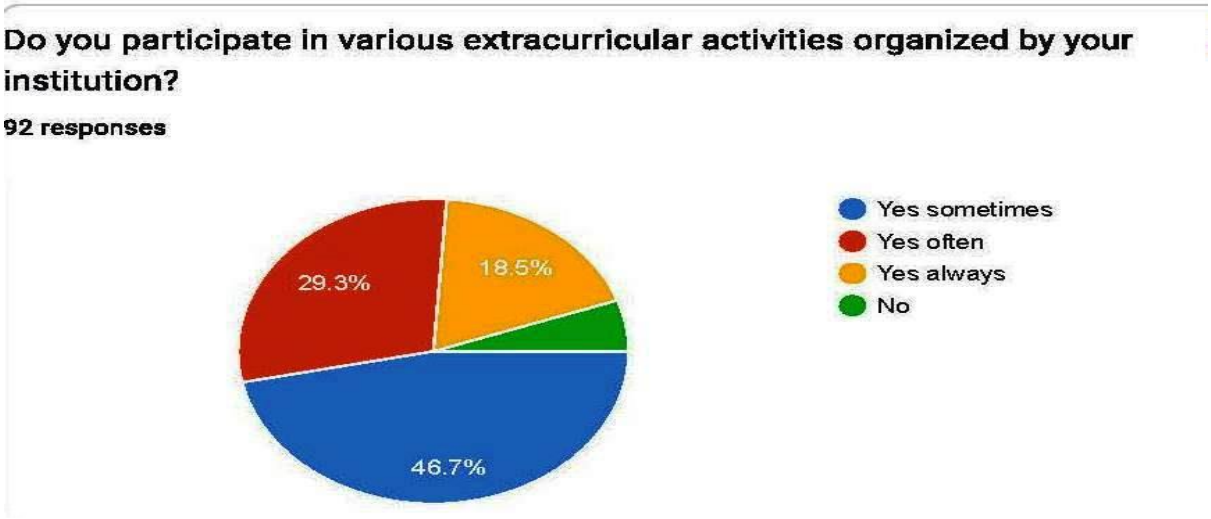
The study aimed to assess respondents' internet usage patterns. When asked about their gaming habits, it was found that 46.7% of them play games, while 53.3% are not interested in playing games. Of those who play games, the majority

(60.9%) have not reached an expert level in gaming, while only 9.8% have achieved an expert level in multiple games. The study further revealed that while gaming is prevalent among users, it has reached a problematic level among a minority of internet users.

When respondents were asked about their online shopping habits, the majority (91.3%) reported doing online shopping, while only a few users reported not doing online shopping. Additionally, the study aimed to determine the relationship between internet usage habits and offline habits related to their research and institutional activities. The findings revealed that interest in other offline habits decreases as internet use increases. This was further quantified using different statistical methods.







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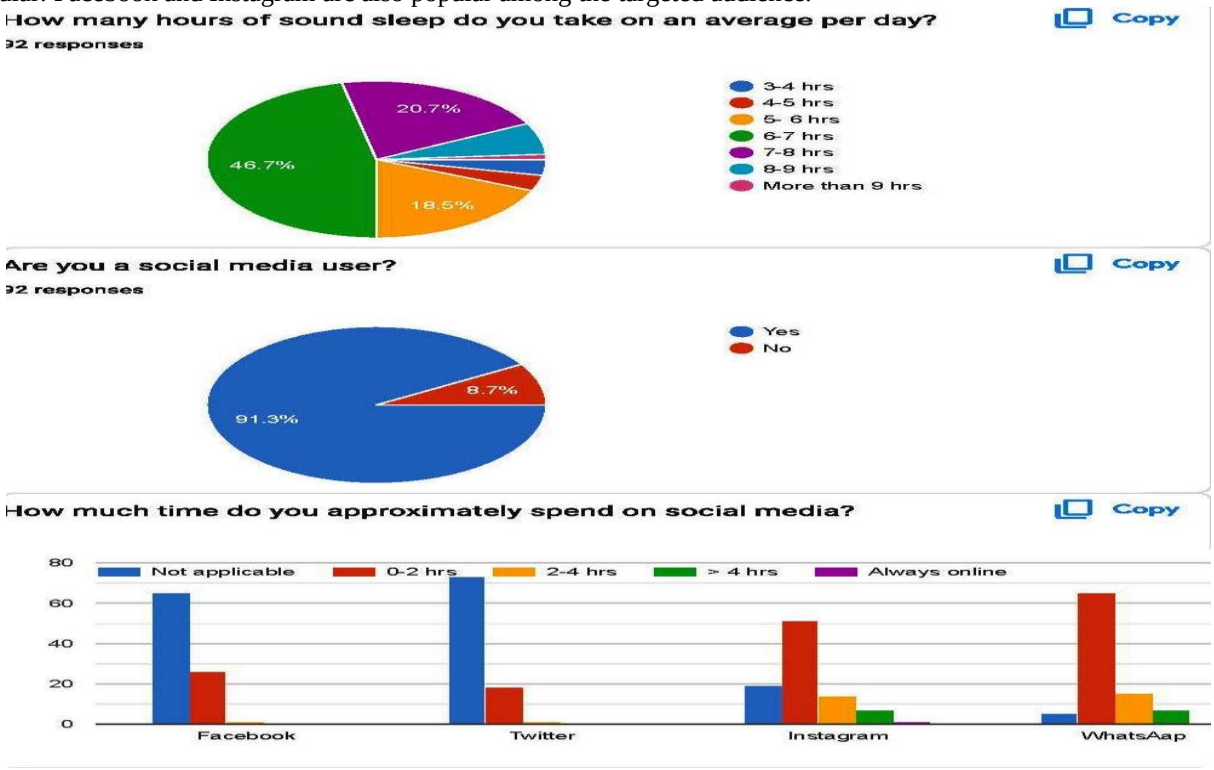
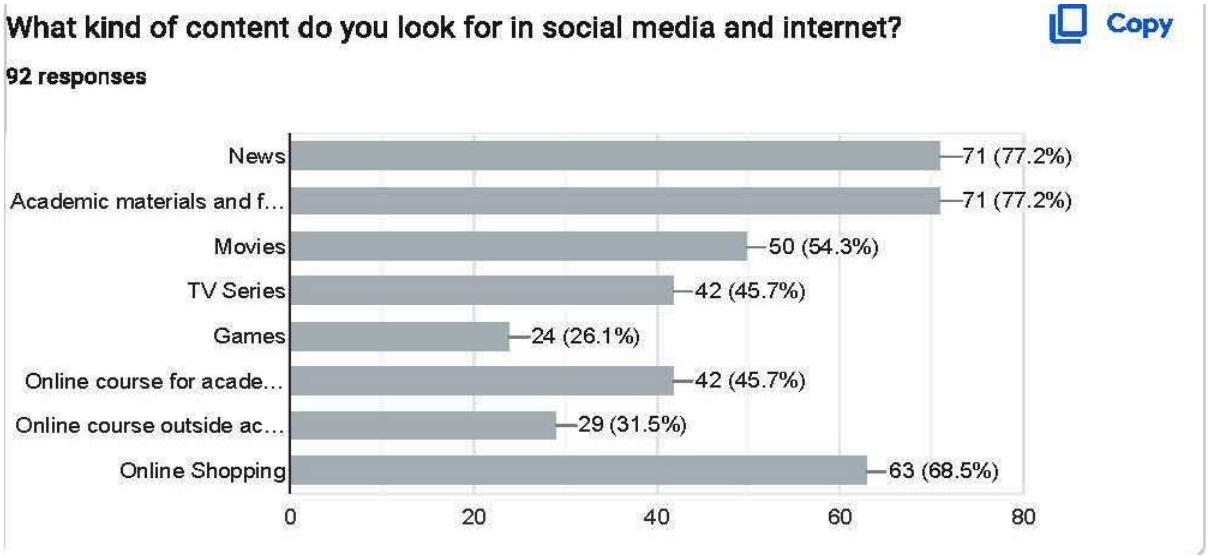
The following pie charts display data related to respondents' time spent on various social media platforms and their sleeping habits. The data shows that social media does not significantly affect users' sleep patterns. Furthermore, the data reveals that Whatsapp is the most widely used social media platform among respondents, while Twitter is the least popular. Facebook and Instagram are also popular among the targeted audience.



Internet usage patterns reveal interesting findings, showcasing users with diverse interests in their online habits. They seek a wide range of information on the internet, ranging from news and academic material to TV series and games. Data indicates that news and educational material are the most favoured content, while online courses outside academics and gaming activities are the least searched for online content.



7.2 Statistical Analysis:

1. Variables:

This report analyzes the relationship between **internet usage patterns** and **academic development** among students in Murshidabad, West Bengal, based on survey data from **BALLB and MBA students**. The study evaluates:

- **Internet access and usage frequency**
- **Purpose of internet use** (academic vs. non-academic)
- **Impact on academic performance** (study hours, online courses, extracurricular participation)
- **Behavioural patterns** (addiction tendencies, sleep disruption, social media usage).

2. Data Overview:
Sample Characteristics
- **Total respondents**: 100+ (from the dataset)
- **Gender**: Majority Male (~70%), Female (~30%)
- **Age groups**: Primarily **15–20** and **>20–25** years.
- **Academic profiles**: **BALLB (70%)**, **MBA (30%)**

Key Variables Analyzed
1. **Internet Access**: Smartphone ownership, daily usage time.
2. **Usage Patterns**: Social media, OTT platforms, online courses, gaming.
3. **Academic Metrics**: Study hours, completed online courses, self-reported productivity.
4. **Behavioural Impact**: Sleep duration, addiction indicators (e.g., neglecting chores, mood changes).

3. Statistical Analysis & Findings:
A. Descriptive Statistics
1. Internet Access & Usage
- **100%** of respondents own smartphones with internet access.
- **Daily Usage**:
  - **>4 hours**: 45%
  - **2–4 hours**: 35%
  - **<2 hours**: 20%
- **OTT Subscriptions**: 65% use Netflix/Amazon Prime; 35% use free platforms.

2. Academic Engagement
- **Online Courses**: 30% enrolled in courses (e.g., Judiciary, Digital Marketing).
- **Study Hours Outside Class**:
  - **1–3 hours/day**: 50%
  - **>3 hours/day**: 30%
  - **<1 hour/day**: 20%

3. Social Media & Non-Academic Use
- **Top Platforms**: WhatsApp (>80%), Instagram (60%), Facebook (40%).
- **Time Spent**:
  - **>4 hours/day on social media**: 25%
  - **2–4 hours/day**: 40%

- **Primary Activities**:
  - Academic research (60%)
  - Entertainment (70%)

B. Correlation Analysis
Pearson's r tested relationships between:
1. **Internet Hours vs. Study Hours**:
   - Weak negative correlation ($r \approx -0.2$). Excessive internet use linked to fewer study hours.

2. **Academic Internet Use vs. Online Courses**:
   - Moderate positive correlation ($r \approx 0.4$). Academic use associated with higher course enrollment.

3. **Social Media Time vs. Sleep Duration**:
   - Negative correlation ($r \approx -0.3$). More social media use linked to reduced sleep (6–7 hours average).

C. Regression Analysis
Dependent Variable: Self-reported academic productivity (scale: 1–5).
Independent Variables:

- Internet hours, social media time, online course enrollment.

Key Results:

- **Academic Internet Use**: Positive impact (β = +0.35, $p < 0.05$).
- **Entertainment Use**: Negative impact (β = -0.28, $p < 0.05$).
- **Online Courses**: Significant predictor of higher productivity (β = +0.42, $p < 0.01$).

D. Chi-Square Test
Hypothesis: Internet usage purpose (academic/non-academic) is independent of academic performance.

- **Result**: $p < 0.01$ → Significant association.
- **Students using internet for academics** reported better grades.

E. Behavioral Insights (ANOVA)

1. **Addiction Indicators**:
   - **20%** reported "always" neglecting chores for internet use.
   - **15%** felt anxious offline (mood improvement when online).
2. **Sleep Disruption**:
   - **30%** slept <6 hours; linked to >4 hours of nighttime internet use.

8. Key Findings

1. **Dual Impact of the Internet**:
   - **Positive**: Academic use (online courses, research) enhances learning.
   - **Negative**: Excessive entertainment/social media reduces study time and sleep.
2. **Digital Divide**: Rural students reported **less access** to paid OTT/educational platforms.
3. **Optimal Usage**: Students with **2–3 hours/day** of academic use performed best.

9. Recommendations

1. **Promote Educational Use**:
   - Subsidized e-learning platforms (e.g., SWAYAM, Coursera).
2. **Screen Time Awareness**:
   - Workshops on time management and digital detox.
3. **Infrastructure Improvement**:
   - Expand broadband access in rural Murshidabad.
4. **Parental/Institutional Role**:
   - Monitor non-academic use; encourage balanced routines.

10. Conclusion

Internet usage significantly impacts academic outcomes in Murshidabad. **Regulated, purpose-driven use** improves performance, while **unstructured use** hampers productivity. Policymakers should prioritize **digital literacy programs** and **infrastructure development** to maximize benefits.

11. Limitations: Self-reported data; future studies could include objective academic scores.

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