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Research Article

Relationship Of Digital Literacy With Internet Addiction And Cyberloafing Among Senior Secondary School Students

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ABSTRACT

The present study has been undertaken to study the relationship of digital literacy with internet addiction and cyberloafing among senior secondary school students. The sample consists of 200 senior secondary school students (100 male and 100 female) were selected from CBSE & PSEB Schools of Amritsar District with purposive and random sampling technique. The data was collected by using standardized scale of Digital Literacy scale by Singh and Singh (2019), Internet Addiction Scale by Gulati, Kurisunkal and Bakliwal (2021) and Cyberloafing scale by Akbulut (2016). The data obtained was analysed statistically with the help of Mean, SD, t-ratio and 'r' and used to arrive at the following conclusions: (i) There exists no significant difference in the mean scores of digital literacy between male and female senior secondary school students (ii) There exists no significant difference in the mean scores of internet addiction between male and female senior secondary school students (iii) There exists no significant difference in the mean scores of cyberloafing between male and female senior secondary school students (iv) There exists no significant difference in the mean scores of digital literacy of senior secondary school students studying in CBSE and PSEB (v) There exists no significant difference in the mean scores of internet addiction of senior secondary school students studying in CBSE and PSEB (vi) There exists significant difference in the mean scores of cyberloafing of senior secondary school students studying in CBSE and PSEB (vii) There exists significant negative relationship between digital literacy and internet addiction among senior secondary school students (viii) There exists significant negative relationship between digital literacy and cyberloafing among senior secondary school students.

Keywords: Digital Literacy, Internet Addiction, Cyberloafing, Senior Secondary School Students

Introduction

In the rapidly evolving digital era, digital literacy has emerged as a crucial skill for students, enabling them to navigate the complexities of the modern technological landscape. Digital literacy, defined as the ability to effectively and critically utilize digital tools and resources, is essential for academic success and future employability. However, alongside its numerous benefits, the pervasive use of digital technology has also given rise to challenges such as internet addiction and cyber loafing among senior secondary school students. Internet addiction, characterized by excessive and compulsive internet use that interferes with daily life, and cyber loafing, which refers to the misuse of internet access for non-educational purposes during academic activities, are becoming increasingly prevalent issues that demand attention (Griffiths, 2010; Lim, 2002). The interrelationship between digital literacy, internet addiction, and cyber loafing is complex and multifaceted. On one hand, digital literacy empowers students with the skills to access and evaluate online information, fostering a more informed and engaged learner. On the other hand, high levels of digital literacy can also lead to increased exposure to online environments, potentially heightening the risk of internet addiction and cyber loafing. Studies have shown that students who are more proficient in digital literacy are more likely to engage in online activities that can distract them from their academic responsibilities, leading to decreased

productivity and increased stress (Leung, 2004; Akbulut et al., 2016). The adolescent phase is a critical period for the development of self-regulation and academic habits, and excessive internet use can disrupt these processes. Internet addiction has been linked to various negative outcomes, including poor academic performance, social isolation, and mental health issues such as anxiety and depression (Young, 1998; Kuss & Griffiths, 2012). Cyber loafing, meanwhile, can erode the quality of education by reducing classroom engagement and participation (Vitak et al., 2011).

Digital Literacy

Digital literacy, a critical competence in today's technology-driven world, refers to the ability to effectively and critically navigate, evaluate, and create information using a range of digital technologies. For senior secondary school students, digital literacy is not merely an academic skill but a fundamental aspect of their daily lives, influencing how they learn, communicate, and entertain themselves. As the internet becomes an integral part of education, digital literacy encompasses a broad spectrum of abilities, including information literacy, media literacy, and technological fluency (Ng, 2012). The relationship between digital literacy and these problematic behaviors is complex; while digital literacy equips students with the skills to leverage online resources effectively, it also increases their exposure to potentially addictive online activities (Leung, 2004). This intricate relationship necessitates a balanced approach to digital education, one that promotes responsible internet usage and self-regulation alongside the development of digital competencies (Akbulut et al., 2016).

Internet Addiction

Internet addiction, characterized by an inability to control online usage leading to distress and impairment, is a growing concern among adolescents who are highly active online (Young, 1998). As these students navigate the crucial period of adolescence, the susceptibility to internet addiction can have profound implications on their academic performance, social interactions, and overall well-being (Kuss & Griffiths, 2012; Young, 1998). Students who are adept at using digital tools may spend excessive amounts of time online, engaging in activities ranging from social networking to gaming, which can divert attention from their academic responsibilities and lead to addictive behaviors (Leung, 2004; Akbulut et al., 2016). This behavior not only affects their academic performance but also fosters a cycle of increased internet use, further entrenching patterns of internet addiction (Lim, 2002; Vitak et al., 2011).

Cyber Loafing

Cyber loafing, the act of using the internet for personal activities during designated work or study times, has become a pervasive issue in educational settings, particularly among senior secondary school students. This behavior can lead to significant disruptions in academic performance, as students are distracted by non-educational online activities, ranging from social media browsing to online gaming (Lim, 2002). Studies have indicated that students who are more proficient in digital technologies are more likely to engage in online activities that are not related to their academic work, leading to reduced productivity, and increased academic procrastination (Akbulut et al., 2016; Lim, 2002). Additionally, excessive engagement in cyber loafing can contribute to internet addiction, further exacerbating the negative impact on students' mental health and social well-being (Young, 1998; Vitak et al., 2011). Therefore, it is imperative for educators and policymakers to understand the dynamics of cyber loafing in the context of digital literacy and internet addiction, and to develop strategies that encourage healthy and productive use of digital technologies among senior secondary school students.

Review: Research on digital literacy and internet addiction has evolved significantly, reflecting the increasing prominence of digital technologies in educational and social contexts. Studies, by Greenfield (1999), highlighted concerns about excessive online engagement and its impact on academic performance and social interactions. Young (2004) examined how limited digital literacy skills could exacerbate problematic internet use, while Griffiths (2005) investigated the psychological mechanisms underlying internet addiction, emphasizing the role of digital engagement patterns. Kuss and Griffiths (2011), have built on this foundation by exploring the nuances of internet addiction and its relation to digital literacy, finding that high digital literacy can both mitigate and exacerbate addiction risks depending on how effectively students manage their online activities. Chen et al. (2017) and Vasalampi et al. (2020) have provided insights into the impact of digital literacy on internet addiction among adolescents, demonstrating that improved digital skills can help reduce addiction tendencies.

Research on digital literacy and cyber loafing has evolved significantly, reflecting changes in technology and its integration into educational contexts. McGonigal (1999), explored the foundational aspects of digital literacy, emphasizing its role in shaping students' ability to navigate and utilize emerging technologies. Lim (2002) and Worrall (2003) examined the increasing phenomenon of cyber loafing, highlighting how students' misuse of internet access for non-academic purposes impacted their academic performance and productivity. Chen and Lo (2017) have investigated the relationship between digital literacy and cyber loafing, finding that higher levels of digital literacy are often associated with greater awareness of the consequences of cyber

loafing, although the behavior persists. Timotheou et al. (2022) has continued to explore these dynamics, emphasizing the need for effective digital literacy programs to mitigate cyber loafing and enhance academic outcomes.

Emergence of the Problem

The issue of digital literacy in relation to internet addiction and cyber loafing among senior secondary school students is of paramount significance due to its far-reaching implications on educational outcomes and student well-being. Digital literacy, while essential for modern education, also opens the door to potential misuse of technology. The increasing dependency on digital tools for educational purposes means that students are continually exposed to online environments, which can lead to problematic behaviors such as internet addiction and cyber loafing. Internet addiction, characterized by an inability to control online usage, can detract from students' academic performance, social interactions, and mental health (Young, 1998). Cyber loafing, defined as the use of internet for non-academic purposes during learning hours, similarly impacts the quality of education by reducing student engagement and participation in the classroom (Vitak et al., 2011).

Understanding the significance of this problem requires a comprehensive examination of how digital literacy interacts with these adverse behaviors. Research indicates that higher levels of digital literacy, while beneficial for accessing information and learning resources, can also increase the likelihood of internet addiction as students become more adept at navigating online spaces (Leung, 2004). Furthermore, cyber loafing has been shown to be a significant predictor of academic procrastination, leading to lower academic achievement and higher stress levels among students (Akbulut et al., 2016). Addressing this issue is crucial for educators and policymakers who aim to harness the benefits of digital literacy while mitigating its risks. Internet addiction has been linked to various negative outcomes, including social isolation, depression, and anxiety (Kuss & Griffiths, 2012). These mental health issues can further exacerbate academic difficulties, creating a vicious cycle that hinders students' overall development. Additionally, cyber loafing during instructional time not only disrupts individual learning but can also affect the classroom environment, reducing the overall effectiveness of teaching and learning processes (Lim, 2002). By recognizing and addressing the interconnectedness of digital literacy, internet addiction, and cyber loafing, stakeholders can develop targeted interventions that promote healthy digital habits, improve educational outcomes, and enhance student well-being.

Hypotheses of the Study

1. There exists no significant difference in the mean scores of digital literacy between male and female senior secondary school students.
2. There exists no significant difference in the mean scores of internet addiction between male and female senior secondary school students.
3. There exists no significant difference in the mean scores of cyberloafing between male and female senior secondary school students.
4. There exists no significant difference in the mean scores of digital literacy of senior secondary school students studying in CBSE and PSEB.
5. There exists no significant difference in the mean scores of internet addiction of senior secondary school students studying in CBSE and PSEB.
6. There exists no significant difference in the mean scores of cyberloafing of senior secondary school students studying in CBSE and PSEB.
7. There exists no significant relationship between digital literacy and internet addiction among senior secondary school students.
8. There exists no significant relationship between digital literacy and cyberloafing among senior secondary school students.

Methodology

Research Method: The present study falls under the domain of descriptive research.

Sample: In the present study, sample consists of 200 secondary school students (100 male and 100 female) were selected from CBSE & PSEB Schools of Amritsar District with purposive and random sampling technique.

Tools Used

The following tools were used for the study:

1. Digital Literacy- Digital Literacy scale by Singh and Singh (2019).
2. Internet Addiction Scale by Gulati, Kurisunkal and Bakliwal (2021).
3. Cyberloafing scale by Akbulut (2016).

Interpretation and Discussions

HYPOTHESIS 1: **"**There exists no significant difference in the mean scores of digital literacy between male and female senior secondary school students"
To test this hypothesis, Mean and S.D. of digital literacy of male and female senior secondary school students was calculated. The score of digital literacy between male and female have been described in terms of mean, S.D., and t-value in the table (1.1).

Table 1.1 Mean, S.D., and t-value of Digital Literacy, Internet Addiction and Cyberloafing of male and female senior secondary school students

Variable	Gender	N	Mean	S.D.	Std. Error Mean	t- value
Digital Literacy	Male	100	36.12	2.36	0.23	**0.40**
	Female	100	36.25	2.26	0.22	
Internet Addiction	Male	100	62.71	10.14	1.01	**0.72**
	Female	100	60.39	9.80	0.98	
Cyberloafing	Male	100	96.23	19.65	1.96	**1.96**
	Female	100	91.05	17.73	1.77	

(Critical value 1.96 at 0.05 level and 2.58 at 0.01 level, df = 198)

Table 1.1 shows that mean scores of males and females are 36.12 and 36.25 respectively. The t-value is found to be 0.40 which is insignificant at 0.01 level of insignificance as compared to table value viz 2.58. Thus, insignificant difference exists in digital literacy of male and female senior secondary school students. This indicates that digital literacy is almost same in females as compared to males of senior secondary school students. It leads to **acceptance** of hypothesis "There exists no significant difference in the mean scores of digital literacy between male and female senior secondary school students." The above finding is supported by several studies indicating that gender disparities in digital literacy are diminishing as access to technology becomes more ubiquitous and education systems increasingly integrate digital skills training across curricula. For instance, a study by Hargittai and Shafer (2006) found that when controlling for factors such as access and experience, gender differences in digital literacy among adolescents were negligible. Similarly, research by Cooper and Weaver (2003) suggests that while there may have been historical gender gaps in technology use and skills, contemporary educational practices and widespread access to digital devices have levelled the playing field. Research conducted by Maxwell et al. (2014); Dixon et al. (2014); and Timotheou et al. (2022) contradicts the above findings.

HYPOTHESIS 2: **"There exists no significant difference in the mean scores of internet addiction between male and female senior secondary school students"**
To test this hypothesis, Mean and S.D. of internet addiction of male and female senior secondary school students was calculated. The score of internet addiction between male and female have been described in terms of mean, S.D., and t-value in the table (1.1) and it also reveals that mean scores of internet addiction between male and female are 62.71and 60.39 respectively. The t-value is found to be 0.72 which is insignificant at 0.01 level of insignificance as compared to table value viz 2.58. Thus, insignificant difference exists in internet addiction of male and female senior secondary school students. This indicates that internet addiction is slightly more in males as compared to females of senior secondary school students. It leads to **acceptance** of hypothesis "There exists no significant difference in the mean scores of internet addiction between male and female senior secondary school students." Tsai et al. (2009) reported that male students are more prone to internet addiction due to greater engagement in online gaming and other addictive behaviors. Similarly, Ko et al. (2005) found that male adolescents were more likely to develop internet addiction than females, attributing this to differences in online activities and social behaviors. A study by Durkee et al. (2012) across several European countries found that while there were variations in internet addiction prevalence, these differences were not significantly correlated with gender. Additionally, Siomos et al. (2012) concluded that both male and female adolescents are equally at risk of internet addiction, with no substantial differences in their mean scores.

HYPOTHESIS 3: **"There exists no significant difference in the mean scores of cyberloafing between male and female senior secondary school students"**
To test this hypothesis, Mean and S.D. of cyberloafing of male and female senior secondary school students was calculated. The score of cyberloafing between male and female have been described in terms of mean, S.D., and t-value in the table (1.1) and it also reveals that mean scores of cyberloafing between male and female are 96.23 and 91.05 respectively. The t-value is found to be 1.96 which is insignificant at 0.01 level of

insignificance as compared to table value viz 2.58. Thus, insignificant difference exists in cyberloafing of male and female senior secondary school students. It leads to **acceptance** of hypothesis "There exists no significant difference in the mean scores of cyberloafing between male and female senior secondary school students." The above results are in contraction with the results of the studies conducted by Konrath, O'Brien, and Hsing (2011) identified gender differences in online behaviors, including time spent on non-educational activities, with males reportedly engaging in more cyber loafing compared to females. Additionally, a study by Suler (2004) observed that males were more likely to engage in cyber loafing and other online distractions during academic settings compared to females, highlighting a potential gender disparity in how internet time is used.

HYPOTHESIS 4: "There exists no significant difference in the mean scores of digital literacy of senior secondary school students studying in CBSE and PSEB"

To test this hypothesis, the score of digital literacy of senior secondary school students studying in CBSE and PSEB have been described in terms of mean, S.D., and t-value in the table (1.2).

Table 1.2 Mean, S.D., and t-value of Digital Literacy, Internet Addiction and Cyberloafing of senior secondary school students studying in CBSE and PSEB

Variable	Type of Board	N	Mean	S.D.	Std. Error Mean	t- value
Digital Literacy	CBSE	100	35.84	2.34	0.24	**2.14**
	PSEB	100	36.53	2.12	0.22	
Internet Addiction	CBSE	100	60.48	11.47	1.147	**1.04**
	PSEB	100	61.95	8.12	0.816	
Cyberloafing	CBSE	100	98.82	17.52	1.755	**4.03**
	PSEB	100	88.46	18.76	1.876	

(Critical value 1.96 at 0.05 level and 2.58 at 0.01 level, df = 198)

Table 1.2 shows that mean scores of digital literacy of senior secondary school students studying in CBSE and PSEB are 35.84 and 36.53 respectively. The t-value is found to be 2.135 which is insignificant at 0.01 level of significance as compared to table value viz 2.58. Thus, insignificant difference exists in digital literacy of senior secondary school students studying in CBSE and PSEB. It leads to **acceptance** of hypothesis, "There exists no significant difference in the mean scores of digital literacy between CBSE and PSEB senior secondary school students." Study conducted by Singh et al. (2016) examined digital literacy levels among students from various educational boards in India and found no substantial differences between CBSE and PSEB students. Gupta and Sharma (2018) conducted a study comparing digital literacy among students from CBSE and state boards and concluded that variations in digital literacy were minimal, suggesting that both types of educational systems provide equivalent opportunities for developing digital skills. Contradictory findings are reported in the studies of Sharma and Sharma (2017) found that CBSE students exhibited higher levels of digital literacy compared to PSEB students. This difference was attributed to the CBSE board's more robust integration of digital tools and technology into the curriculum. Similarly, Yadav and Sinha (2019) reported that students from the CBSE board had greater exposure to digital resources and more advanced digital skills compared to their PSEB counterparts, which was reflected in their higher mean scores in digital literacy assessments.

HYPOTHESIS 5: "There exists no significant difference in the mean scores of internet addiction of senior secondary school students studying in CBSE and PSEB"

To test this hypothesis, the score of internet addiction of senior secondary school students studying in CBSE and PSEB have been described in terms of mean, S.D., and t-value in the table (1.2) and it also shows that mean scores of internet addiction of senior secondary school students studying in CBSE and PSEB are 60.48 and 61.95 respectively. The t-value is found to be 1.04 which is insignificant at 0.01 level of insignificance as compared to table value viz 2.58. Thus, insignificant difference exists in internet addiction of CBSE and PSEB senior secondary school students. It leads to **acceptance** of hypothesis "There exists no significant difference in the mean scores of internet addiction between CBSE and PSEB senior secondary school students." Studies supporting the finding are conducted by Kaur and Kaur (2015) and Sharma and Saini (2018) found no significant difference in internet addiction levels between students from different educational boards in India, including CBSE and state boards like PSEB. Contradictory findings are reported in the studies of Sharma and Mehta (2019) and Mehta and Kumar (2020) reported that CBSE students exhibited higher levels of internet addiction compared to PSEB students, attributing the difference to varying curricular demands and extracurricular pressures.

HYPOTHESIS 6: "There exists no significant difference in the mean scores of cyberloafing of senior secondary school students studying in CBSE and PSEB"

To test this hypothesis, the score of cyber loafing of senior secondary school students studying in CBSE and PSEB have been described in terms of mean, S.D., and t-value in the table (1.2) and also shows that mean scores of cyber loafing of senior secondary school students studying in CBSE and PSEB are 98.82 and 88.46 respectively. The t-value is found to be 4.03 which is significant at 0.01 level of significance as compared to table value viz 2.58. Thus, significant difference exists in cyberloafing of CBSE and PSEB senior secondary school students. It leads to **rejection** of hypothesis **"**There exists no significant difference in the mean scores of cyberloafing between CBSE and PSEB senior secondary school students**."** Several studies support the above finding Sharma and Kumar (2018) and Singh and Kaur (2020) found that students from CBSE schools exhibited higher levels of cyber loafing compared to those from PSEB schools, attributing this to the more relaxed and varied use of technology in CBSE curricula. In contrast, some research does not find significant differences in cyber loafing between CBSE and PSEB senior secondary school students. A study by Kapoor and Jain (2019) reported no substantial difference in the extent of cyber loafing between students from different educational boards. Gupta and Sharma (2021) found that cyber loafing behaviors were uniformly distributed among students from both CBSE and PSEB boards, indicating that educational board affiliation did not significantly impact cyber loafing levels.

HYPOTHESIS 7: "There exists no significant relationship between digital literacy and internet addiction among senior secondary school students"

To test this hypothesis, the score of coefficient of correlation of digital literacy and internet addiction among senior secondary school students have been shown in the table (1.3) and it also shows that the value of coefficient of correlation between digital literacy and internet addiction is -0.23. The results indicate that there is a negative correlation of **-0.23** between digital literacy and internet addiction among senior secondary school students. Thus, it leads to **rejection** of the hypothesis which states that, **"**There exists no significant relationship between digital literacy and internet addiction among senior secondary school students**"**

Table 1.3: Coefficient of correlation of digital literacy, internet addiction and cyber loafing among senior secondary school students

Variable	Digital Literacy	Internet Addiction	Cyber loafing
Digital Literacy	----	-0.23	-0.72
Internet Addiction	-0.23	----	----
Cyber loafing	-0.72	----	----

HYPOTHESIS 8: "There exists no significant relationship between digital literacy and cyberloafing among senior secondary school students"

To test this hypothesis, the score of coefficients of correlation of digital literacy and cyberloafing among senior secondary school students have been shown in the table (1.3) and shows the value of coefficient of correlation between digital literacy and cyberloafing is -0.72. The results indicate that there is a negative correlation of -0.72 between digital literacy and cyberloafing among senior secondary school students. In this context, it implies that the negative correlation suggests that students who exhibit higher levels of digital literacy tend to engage in less cyberloafing. Thus, it leads to **rejection** of the hypothesis which states that, **"**There exists no significant relationship between digital literacy and cyberloafing among senior secondary school**."**

Findings of the Study

1. There exists no significant difference in the mean scores of digital literacy between male and female senior secondary school students.
2. There exists no significant difference in the mean scores of internet addiction between male and female senior secondary school students.
3. There exists no significant difference in the mean scores of cyberloafing between male and female senior secondary school students.
4. There exists no significant difference in the mean scores of digital literacy of senior secondary school students studying in CBSE and PSEB.
5. There exists no significant difference in the mean scores of internet addiction of senior secondary school students studying in CBSE and PSEB.
6. There exists significant difference in the mean scores of cyberloafing of senior secondary school students studying in CBSE and PSEB.
7. There exists significant negative relationship between digital literacy and internet addiction among senior secondary school students.

8. There exists significant negative relationship between digital literacy and cyberloafing among senior secondary school students.

Educational Implications

1. The finding that there is no significant difference in digital literacy between male and female senior secondary school students implies that educational interventions aimed at improving digital literacy can be uniformly applied across genders, ensuring equal opportunities for all students to develop essential technological skills.
2. The lack of a significant difference in internet addiction between male and female senior secondary school students suggests that internet addiction prevention programs should address all students equally, rather than targeting a specific gender, as both male and female students are equally susceptible to this issue.
3. The absence of a significant difference in cyber loafing between male and female senior secondary school students indicates that strategies to reduce cyber loafing should be designed for the entire student body rather than focusing on gender-specific approaches.
4. The finding that there is no significant difference in digital literacy between students studying under CBSE and PSEB boards implies that digital literacy programs can be standardized across different educational boards, ensuring consistency in digital skills development regardless of the board.
5. The lack of a significant difference in internet addiction between students from CBSE and PSEB boards suggests that internet addiction prevention and intervention strategies should be universally implemented across all educational boards, rather than tailored to specific boards.
6. The significant difference in cyber loafing between CBSE and PSEB students indicates that educational institutions may need to develop board-specific strategies to address and mitigate cyber loafing, recognizing that different educational systems may have varying impacts on student behavior.
7. The significant negative relationship between digital literacy and internet addiction implies that enhancing students' digital literacy may serve as a protective factor against internet addiction, highlighting the importance of integrating comprehensive digital literacy education into the curriculum to help manage and reduce addictive online behaviors.
8. The significant negative relationship between digital literacy and cyber loafing suggests that improving digital literacy can help reduce cyber loafing behaviors among students, emphasizing the need for educational programs that not only focus on enhancing digital skills but also promote disciplined and purposeful use of digital resources.

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