



Impact of Digitalization on Study Habits among Minority Students

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ABSTRACT

This research report examines the impact of digitalization on minority pupils' study habits in government schools in the Punjabi regions of Ropar and Mohali. The study employs a survey method to gather data, allowing for a systematic analysis of the attitudes, behaviors, and experiences of minority students in utilizing digital tools for academic purposes. In all, 625 students were administered, comprising 325 males and 300 females between the age group of 14 to 15 years in the ninth grade. It investigates whether digital tools contribute to enhanced learning outcomes, collaboration opportunities, and access to educational resources, or if they exacerbate existing disparities in educational attainment, such as the digital divide.

Keywords: digitalization, government schools, minority students, Punjab, social media, and study habits

INTRODUCTION

With technology advancing into every area of life, the digital age has had a profound effect on society as a whole, including education. Understanding how these advances affect students' study habits and learning experiences—especially those from minority backgrounds—is becoming increasingly important as digital tools and resources are increasingly incorporated into academic settings. With a focus on government schools in the Indian state of Punjab's Ropar and Mohali regions, this study examines the intricate relationship between minority students' study habits and digitalization. Students can now readily access a wealth of information online, including research materials, academic literature, and educational resources, thanks to the democratization of digitalization. Students are empowered by this accessibility to investigate many viewpoints and enhance their education outside the confines of the classroom (Taipe, 2024).

Minority students are facing several disparities in the educational system because they frequently face institutional and socioeconomic impediments. It is critical to look into how these technologies impact minority students' study habits, academic performance, and overall educational outcomes as digitalization permeates classrooms. Students can participate in active learning through the use of digital tools, which provide interactive learning platforms like educational apps, online simulations, and multimedia materials. These systems offer customized instruction, real-time feedback, and cooperative problem-solving, all of which can improve student understanding and engagement (Khanduri & Teotia, 2023). Study habits have changed as a result of digitalization, which offers convenience and flexibility in accessing educational resources at any time and from any location. In order to accommodate a variety of schedules and learning preferences, students can participate in virtual classes, study remotely, and complete asynchronous learning activities (Hans & Crasta, 2019). Students can develop their organizational and time management abilities with the use of digital tools like note-taking software, task management applications, and calendars. Students that use these tools to organize their study schedules, create objectives, and rank their work will be more productive and do better academically (Freo, 2022). This study aims to offer insights into the unique setting of Punjab, where the dynamics of digitalization may interact differently with the socio-cultural fabric of the region, by concentrating on government schools in the districts of Ropar and Mohali. A methodical investigation of minority students' attitudes, behaviors, and experiences using digital learning tools can be accomplished through the use of surveys. This study attempts to obtain

detailed insights into the access, usage patterns, and perceived advantages and difficulties of digitalization in students' study habits by directly collecting data from students at government schools. By using this method, the study aims to close current gaps in the literature and provide useful recommendations for practitioners, administrators, and educational policymakers that support minority students' fair access to digital resources.

By means of an extensive examination, this study aims to tackle many significant inquiries: How do minority pupils in government schools utilise digital technologies for studying? What benefits and drawbacks do digitalisation appear to have for their methods of study? What roles might socioeconomic factors, institutional support, and cultural influences play in mediating the effects of digitalisation on minority students' study habits? By looking at these topics, the study hopes to increase understanding of the complex linkages between digitalisation and the study habits of minority students.

Digitalization has rapidly transformed various aspects of education, including how students engage with their studies. This study aims to investigate the impact of digitalization on the study habits of minority students, focusing on how digital tools and resources influence their learning patterns. Additionally, the study seeks to explore whether digitalization affects male and female minority students differently. Two hypotheses guide this investigation. The first hypothesis (H_1) posits that there is no significant difference in the impact of digitalization on the study habits of minority students as a whole. The second hypothesis (H_2) suggests that there is no significant difference between the impact of digitalization on the study habits of male and female minority students. By examining these hypotheses, the study aims to provide a comprehensive understanding of how digitalization influences the educational experiences of minority students, with a particular focus on gender differences.

LITERATURE REVIEW

Digital technology integration in educational settings has changed the face of teaching and learning, posing opportunities as well as challenges for students, especially those from underrepresented backgrounds (Vasilyeva, 2021). This literature review aims to provide a comprehensive analysis of the body of knowledge about the ways in which digitalization influences the study habits of minority students. Through the consolidation of significant discoveries from empirical research, theoretical models, and academic discourse, this review aims to clarify the intricate dynamics influencing the

correlation between digitalization and study practices among various student demographics (Hegyesh et al., 2017).

Several studies have examined the connection between minority kids' academic success and digitalization, pointing out both advantages and disadvantages. For example, Kristan et al. (2018) observed that minority students' academic performance was positively connected with their access to digital resources, which allowed them to interact with peers, access educational materials, and participate in interactive learning experiences. Other research, however, has issued a warning on the possible harm that digital distractions and excessive screen time may do to academic performance (Rideout & Katz, 2016).

Students' study habits, digital literacy, and learning methodologies are all impacted by digitalization. Due to differences in access to technology and digital resources, minority students may have difficulties in acquiring digital literacy competencies (Warschauer & Tate, 2017). Furthermore, studies indicate that minority students frequently do not have the opportunity to develop the critical thinking abilities and information evaluation strategies needed to successfully navigate the digital ecosystem (Pettersson, 2021).

Language ability, cultural norms, and socioeconomic background are only a few of the sociocultural variables that mediate how digitalization affects minority students' study habits. Minority students from underprivileged backgrounds are more likely to encounter obstacles while trying to use digital resources, which exacerbates already-existing disparities in educational results (Vasilyeva, 2021). Furthermore, cultural variables could affect how students feel about using technology and what digital learning environments they prefer (Zambrano et al., 2016).

Digitalisation can increase student motivation and engagement since it provides immersive and interactive learning opportunities. Digital platforms that include varied viewpoints and culturally appropriate content may be advantageous to minority pupils (Arredondo-Salcedo et al., 2022). However, studies indicate that elements like instructional design, feedback systems, and students' innate interest in the subject matter affect how effective digital technologies are at fostering motivation. (Parmis et al., 2020).

In order to effectively integrate digital technology into educational settings, policy measures that eliminate access hurdles and promote digital fairness must be accompanied with institutional support. In order to guarantee that minority students have equitable access to digital resources, schools and educational institutions are essential in providing the necessary infrastructure, training opportunities, and support services (Arisoy, 2022). Furthermore, minority students might be empowered to fully use the potential of

digitalization in their study habits through legislative initiatives targeted at closing the digital divide and fostering digital literacy abilities.

Therefore, research on how digitalization affects minority students' study habits emphasizes the intricate relationship that exists between technology, sociocultural context, and academic performance. Digitalization has chances to improve academic performance and learning experiences, but it also raises issues with equity, access, and digital literacy. Further research should continue to explore creative methods of utilizing digital technology to support a variety of learning needs and promote equitable educational outcomes for each student.

There hasn't been enough research done in the literature to determine how precisely digitalization affects minority students' study habits. Although the impacts of digitization on study habits have been extensively studied, minority children have not received as much attention, especially in particular situations such as government schools in Punjab, India. Longitudinal and mixed-methods research are also necessary to comprehend the complex and long-term effects of digitalization on the study habits of minority students. The lack of research in this area makes it difficult to create focused interventions and regulations that encourage fair access to digital resources and enhance minority students' academic performance. Therefore, the purpose of this study is to close the knowledge gap about how minority students' study habits are impacted by digitalization. The study aims to investigate how minority students' study habits, educational experiences, and academic performance are impacted by digital technology by focussing on this specific demographic within the context of Punjabi government schools in India. Comprehending these dynamics is vital in formulating customized interventions and policies that foster fair distribution of digital resources and augment academic achievements for minority pupils in heterogeneous educational environments.

RESEARCH METHOD

The goal of the study was to determine how minority students' study habits were affected by digitalization. Survey method was used to gather the data. To choose the sample, random sampling was used.

Tools

In this research study, the Study Habit Scale developed by Deepti Sharma and Masaud Ansari (2017) was used. There is total of 48 items, which consisted of 37 positive items and 11 negative items. There were five possible responses on the five-point Likert scale: strongly agree, agree, undecided,

disagree, and disagree strongly. For positive items, the scoring was 5, 4, 3, 2, and 1, and for negative items, the scoring was reversed. The scale's dependability was determined to be 0.863, significant at the 0.01 level of significance. The scale's validity was confirmed by Pearson's coefficient of correlation, which varied for each dimension and was significant at the 0.01 level of significance. The values ranged from 0.385 to 0.508. As a result, the scale was determined to be valid and dependable for the current investigation.

'Digital and Social Media Engagement Scale'

The researcher herself developed the "Digital and Social Media Engagement Scale". The study's goals were in mind as the researcher created the scale's initial draft. The researcher examined the self-prepared tools prepared by different researchers in the past to know and understand the process of developing a scale. The research tool had gone through four stages and is described below:

In the first Stage, to develop the tool for the "Digital and Social Media Engagement Scale", the researcher examined previous literature in detail. After reviewing the previous literature in the concerned field, the researcher contacted many experts in the concerned area. In the second stage, wide-ranging statements related to the "Digital and Social Media Engagement Scale", were sought from supervisors and different subject experts who had specialization in the concerned field. In the third stage, the comments, suggestions, and corrections were provided by the supervisor and the various experts and all suggestions were integrated by the researcher into the scale. The recurring and vague statements were discarded from the scale. In the fourth Stage, the scale was tried out on a small sample, i.e., adolescents. The scale was again administered to the same adolescents with a gap of one month to check the consistency of the statements. In the last, the scale was once again given to the subject experts for final suggestions, and their suggestions were incorporated by the researcher. Hence, the scale was finalized.

Originally there were 80 items, but 60 items were retained in the final tool after eliminating vague and ambiguous statements. There are six dimensions of the scale, i.e. educational needs, building community relationships, amusement and enjoyment, time span, facing restraints and future prospects. The negative assertions were marked in the opposite order from the positive statements, which were marked 5, 4, 3, 2, and 1.

Reliability and Validity of the Scale

The reliability of the scale ranged between 0.70-0.86 in all the dimensions, which is high, and the validity of the scale was established by the experts.

Table 1*Dimensions of the Scale*

Sr. No.	Name of the Dimension	No. of Statements
1.	Educational Needs	10
2.	Building community relationships	10
3.	Amusement and Enjoyment	10
4.	Time Span	10
5.	Facing Restrains	10
6.	Future Prospects	10
Total		60

Table 2*Scoring for the Positive Statements*

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
5	4	3	2	1

Table 3*Scoring for the Negative Statements*

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1	2	3	4	5

All groups have Cronbach's alpha values greater than 0.70, indicating that our scale's internal consistency with this particular sample is good.

Participants

The present study was focused on grade 8th students from six different schools in Ropar and Mohali districts of Punjab, India. The researchers personally contacted students and administered a total 625 students.

The following hypotheses were proposed:

H₁: There is no significant difference between the impact of digitalization on study habits of minority students

H₂: There is no significant difference between the impact of digitalization on study habits of male and female minority students

Table 4

Reliability of Scale Cronbach's alpha for all the groups

Impact of the "Digital and Social Media Engagement Scale"	Reliability	Number of items
Dimension-I: Educational Needs	0.813	10
Dimension-II: Building Community	0.709	10
Dimension-III: Amusement	0.747	10
Dimension-IV: Time Span	0.721	10
Dimension-V: Facing Restrains	0.860	10
Dimension-VI: Future Prospects	0.801	10

RESULTS

Examining how digitalization impacts minority students was the aim of the study. In order to determine how using digitalization may impact many components of study habits, including time management, focus, organization, and self-discipline, this purpose entails exploring these areas. Researchers hope to learn whether minority students ‘who use digital tools frequently experience distractions, procrastination, or disturbances in their study habits.

Table 5

Correlation between Digitalization and Study Habits of Adolescents

Variables	N	Mean	R	p-value
Digitalization	625	154.77	0.559	0.000*
Study Habits	625	163.03		

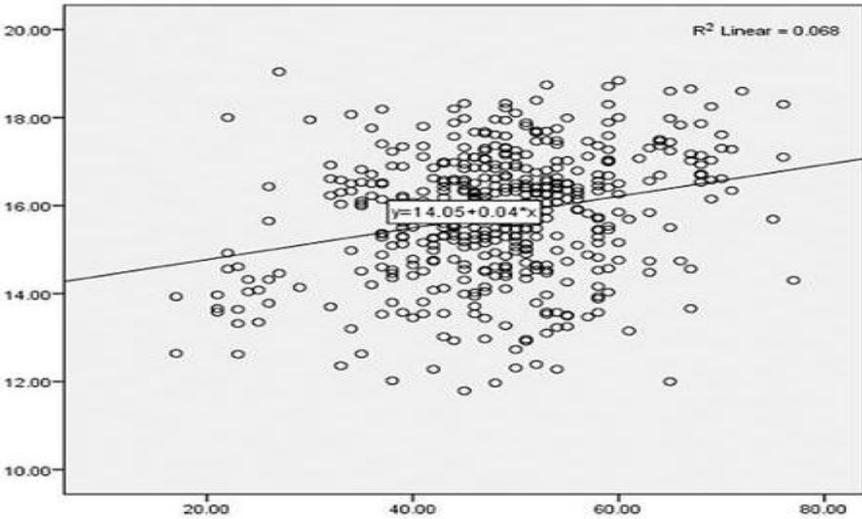
*Significant at 0.05 level

Table 5 and Figure 1 present statistical data on the relationship between usage of digital tools and study habits among 300 participants. Here, N indicates the number of participants, while "mean" represents the average score for each variable. The correlation coefficient, which indicates the direction and intensity of the association between study habits and the use of

digital tools, is displayed by the parameter r . The correlation coefficient in this case is 0.559, which suggests that there is a somewhat positive correlation between the two variables.

Figure 1

Scatter Plot showing Correlation between digitalization and Study Habits of Adolescents



This finding has been supported by a study by Giang (2019) that researched the most often utilized websites were social networking sites. Moreover, a noteworthy correlation was observed between the degree to which students utilized social networking sites, their study practices, and their interpersonal connections with their teachers, families, and friends. More precisely, the more frequently students used social networking sites, the stronger the positive association was found between their study habits and interpersonal relationships. Boahene et al. (2019) investigated that a strong positive association exists between students' usage of digital networks and their study habits; the more time students spend on their study habits, the more time they spend on social networking sites. Haruna (2021) found out that social media is a potent medium for communication that has influenced practically every aspect of daily life, especially for students. It makes information transfer easier and fosters teamwork. This study looks at how social networking apps affect engineering university students' study habits. The study examined several aspects of students' study habits. A total of 437

respondents participated in the research. Utilizing the structural equation modeling (SEM) method, the acquired data was examined. The variables of study habits and digital and social media use are significantly correlated., as revealed by the structural relationship analysis of the various study habit elements. Aslam (2020) suggested that students' learning habits were positively impacted by consuming electronic media, including television. Okeke & Nneka (2019) discussed that there is no correlation between students' use of social media and their study habits. Even though the study found that digital tools had no appreciable impact on learners' study habits, it was nonetheless advised that teachers, parents, guardians, and school administration keep an eye on their children's usage of digital tools.

Therefore, hypothesis 1: There will be no significant difference between the impact of digitalization on study habits of adolescents stands rejected, and there is a correlation between the digitalization and study habits of adolescents. The "p value" column indicates the significance level of the correlation coefficient. A p value of 0.000 signifies that the correlation is statistically significant at the 0.05 level. Overall, the data suggests that higher levels of digital tool usage are associated with better study habits among the participants. The objective of studying the impact of digitalization on the study habits of male and female adolescents is to gain insights into how their engagement with digital platforms influences their approaches to studying and learning. In order to achieve this objective, it will be necessary to investigate the study habits of minority students, both male and female, taking into account their social media usage patterns. Specific topics to be examined include time management, attention, organization, and self-discipline.

Researchers aim to investigate whether frequent use of digital tools leads to distractions, procrastination, or changes in study routines among both genders. Additionally, the objective encompasses exploring potential differences in how male and female minority students utilize digitalization and how these differences may relate to variations in their study habits. By conducting this study, researchers seek to identify any gender-specific impacts of digitalization on study habits and provide insights that can inform strategies and interventions aimed at promoting effective study habits and academic success among minority students, irrespective of gender.

Table 6 provides a comprehensive overview of two variables, digitalization usage, and study habits, categorized by gender across a total of 625 participants. The "digitalization" variable presents the total count as well as the counts, averages, and standard deviations for participants who are male and female. With a standard deviation of 15.22, the average digitalization consumption among men is 156.52, while the average among females is

marginally lower at 154.07 with a standard deviation of 14.66. The average gender-specific digitization usage is calculated to be 155.34. Similarly, matching statistics are shown for the "study habit" variable. With a standard deviation of 15.59, the average study habit score for men is 164.52, and the average score for women is 161.03 with a standard deviation of 14.67. The average score for all genders' study habits is 162.85. Overall, the table offers a clear comparison of digitalization usage and study habits between males and females, providing valuable insights into potential gender-based differences in these behaviors.

Table 6
Gender- wise overview of the Digital and Social Media Engagement Scale and study habits of adolescents

Variables	Gender	Count	Mean	Standard Deviation
Digitalization	Male	325.00	156.52	15.22
	Female	300.00	154.07	14.66
	Total	625.00	155.34	14.99
Study habit	Male	325.00	164.52	15.59
	Female	300.00	161.03	14.67
	Total	625.00	162.85	15.24

Now we compare all these variables to see if they are statistically significant different between male and female. We applied an independent sample t test to compare means.

Table7
Independent T-test for Equality of Means

Variables	Independent Samples t-test for equality of means					
	T	df	P- valu e	95% Difference	Confidence Interval of the	
					Lower	Upper
Digitalization	2.04 1	623	.042	.092		4.795
Study habit	2.87 6	623	.004	1.107		5.872

Table 7 presents the results of independent sample t-tests conducted to assess the equality of means for two variables: digital and social media engagement and study habits. For the "digitalization" variable, the t-value is 2.041 with a corresponding degree of freedom (df) of 623. At the 0.05 threshold of significance, the corresponding p-value of .042 indicates statistical significance. The 95% confidence interval of the mean difference (0.092–4.795) suggests that there is a significant difference between the groups compared in terms of digitalisation consumption. Likewise, with the same degrees of freedom, the t-value for the "study habit" variable is 2.876. At the 0.05 threshold of significance, the p-value of .004 indicates statistical significance. There appears to be a substantial difference in study habits between the groups that were examined, as indicated by the 95% confidence interval of the mean difference, which runs from 1.107 to 5.872.

Therefore, hypothesis 2 stands rejected, and there is a significant difference between digitalization and the study habits of male and female adolescents. In summary, both digitalization usage and study habits show significant differences between the groups being compared, highlighting potential areas for further investigation or intervention.

DISCUSSION AND CONCLUSIONS

First, it was discovered that minority students' study habits were significantly impacted differently by digitalization. Therefore, Hypothesis 1: There is no significant difference between the impact of digitalization on study habits of minority students gets rejected. Minority students may face unique challenges such as limited access to digital resources, digital literacy gaps, or a lack of personalized online learning tools that align with their cultural contexts. These factors contribute to the rejection of the null hypothesis, highlighting that digitalization affects this student group more distinctively than initially predicted. This finding emphasizes the need for educational policies to address digital equity, ensuring that minority students receive adequate support in their learning environments.

Secondly, it was clear from the results that there is a significant difference between the impact of digitalization on study habits of male and female minority students. Therefore, Hypothesis 2: There is no significant difference between the impact of digitalization on study habits of male and female minority students gets rejected. This suggests that gender plays a crucial role in how students adapt to digital tools and environments. Possible explanations for this difference could include gendered experiences with technology, varied access to educational resources, or societal norms influencing how male and female students engage with digital platforms. The

rejection of Hypothesis 2 underscores the need for a gender-sensitive approach when integrating digital tools into educational systems for minority students. Addressing these differences can improve educational outcomes by providing targeted interventions based on the unique needs of male and female students. The findings from these hypotheses highlight important nuances in how digitalization affects minority students, pointing to broader structural inequalities that must be considered in the design of digital learning environments. Therefore, through resolving educators' concerns and applying the knowledge gathered from this research, educational stakeholders can successfully incorporate digital tools to improve instruction and student results (Saheb & Tbena, 2024). A thorough examination of survey data and previously published research has produced a number of important conclusions.

First, the advent of digitization has had a significant impact on the way minority students' study since it provides opportunities for improved information access, interactive learning, and improved time management and organizational skills. However, problems such as the digital divide, disruptions, and excessive information also impact study habits, underscoring the need for targeted interventions to address these variations (Hetmanczyk, 2024). Second, the study emphasizes how crucial it is to take sociocultural aspects like socioeconomic position, linguistic ability, and cultural norms into account when figuring out how minority students' study habits are affected by digitalization. The opportunities and constraints that are unique to a given context affect how students interact with digital resources and how well they serve learning objectives. In general, this study advances our knowledge of the intricate relationships that exist between minority students' study habits and digitalization. The study offers insights that can guide the creation of focused interventions and policies intended to improve educational outcomes and promote digital equity for minority students in a variety of educational settings by highlighting the opportunities and challenges brought about by digital technologies.

IMPLICATIONS

The study's conclusions may help policymakers understand the unique requirements of minority children in a digitally enhanced learning environment. Comprehending the disparity in digital access and resources can aid in developing fair policies. For instance, governments and educational institutions may prioritize digital infrastructure and offer financing for underprivileged places if it is demonstrated that minority students have restricted access to dependable internet and digital tools. Minority pupils

frequently come from homes with little access to technology (Spjeldnaes & Karlsen, 2024). They may find it challenging to use digital platforms efficiently as a result, which may hinder their capacity to create productive study routines. Minority students can need more guidance and assistance, in contrast to their more accustomed peers, in order to fully benefit from digital learning settings. Also, the study's conclusions can assist instructors in modifying their pedagogy to better meet the needs of minority students' digital learning environments. More culturally sensitive digital tools and resources could be incorporated by colleges and universities into their curricula to improve accessibility and inclusivity for a wider range of learners. The psychological effects of digitalization on study habits may be revealed by the research, especially if minority students encounter isolation or digital tiredness in online learning settings. Support programs that assist students in striking a healthy balance between screen time and wellbeing, such as mental health counselling, stress management classes, and digital detox techniques, may need to adjust as a result (Zhang et al., 2024).

If the study discovers that linguistic or cultural hurdles make it difficult for minority students to use digital platforms, it could have an impact on creating more inclusive digital learning settings. It may be necessary for educational institutions to offer support systems, culturally appropriate curriculum, and multilingual platforms that take into account the varied backgrounds of minority students. This study offers important insights into how minority students' study habits are impacted by digitalization, which could have a substantial impact on policymakers, educators, institutions, and communities. In the digital age, educational systems may foster greater fairness, inclusion, and academic success by addressing the opportunities and difficulties the report highlights.

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