



# Status of Computer Literacy among Secondary School Students and Its Impact on Academic Achievement in Hassan District

<sup>1</sup> Dr. Vijaya Shivaputrappa Agadi

<sup>1</sup> Assistant Professor

<sup>1</sup> Vivekananda College of Education, Arsikere, Hassan District Pin Code: 573103 Karnataka, India.

**Abstract:** The present study looks on the condition of computer literacy among secondary school students and its impact on academic accomplishment in Arsikere, Hassan District, Karnataka. The study's objectives are to (1) investigate the relationship between academic achievement and computer literacy, (2) compare academic achievement among students with varying levels of computer literacy and (3) investigate differences in academic achievement across school management types (government, private aided and private unaided). A random sample of 120 secondary school students was chosen to represent all school management categories. Meenakshi and Dr. Narayanaswamy M. designed the Computer Knowledge Questionnaire and official school records were used to collect academic results for the study. The statistical analyses included mean, standard deviation, correlation, one-way ANOVA and Scheffe's post hoc test. The data demonstrated a substantial positive relationship between computer literacy and academic accomplishment, implying that students with higher computer literacy do better academically. Students with higher reading levels outperformed others, although the difference between average and high levels was not statistically significant. Furthermore, school management style affects academic achievement, with private unaided school students outperforming their counterparts in government and private aided schools. The study suggests that computer literacy and the quality of educational infrastructure are both important factors in encouraging academic performance among secondary students.

**Index Terms** – Literacy, Academic Achievement, Secondary School Students, Computer Education.

## 1. INTRODUCTION

Academic achievement among secondary school students remains an important indicator of educational effectiveness and student growth in India. In recent years, the incorporation of technology into the educational system has substantially altered teaching-learning environments, making computer literacy an essential component of modern education. With the rise of digital India efforts and broad use of ICT (Information and Communication Technology) in schools, there is an increasing need to assess how computer literacy affects academic success. The National Education Policy (NEP), 2020 emphasizes the importance of technology integration in altering education delivery, with a focus on digital learning platforms and computer-based evaluations (MHRD, 2020). As a result, students who are more skilled at utilizing computers may find themselves better ready to access digital resources, finish assignments and engage in online learning, all of which can improve academic achievement.

In India, various studies have stressed the importance of computer literacy in enhancing academic achievements. Like, Kumar and Sharma (2018) discovered a considerable positive relationship between computer competency and academic achievement among high school students in urban and semi-urban areas. Similarly, Mehta and Joshi (2020) found that students with better access to and comprehension of computer applications had improved academic engagement and performance across disciplines. Despite these findings, computer literacy discrepancies continue, notably among students from various school management types (government, private aided and private unaided), socioeconomic backgrounds and geographical areas. These discrepancies contribute to the digital divide and may have a substantial impact on students' academic performance, particularly in remote regions like Hassan. As a result, the purpose of this study is to investigate the level of computer literacy among secondary school students in Hassan District and assess its impact on academic achievement, thereby providing valuable awareness into how digital preparedness influences educational outcomes in the Indian schooling system.

## 2. NEED FOR THE STUDY

The necessity to investigate the "Status of Computer Literacy among Secondary School Students and its Impact on Academic Achievement in Hassan District" stems from the growing importance of digital skills in education and daily life. In India, the fast integration of technology into schools through initiatives such as Digital India and ICT@Schools has made computer literacy a required skill for students (MHRD, 2019). However, not all students have equal access to computers and training, particularly in remote areas such as Hassan. This digital divide can have an impact on students' academic performance, as individuals with more computer skills may find it simpler to access online learning resources, complete assignments and engage in virtual classrooms (Bansal & Jain, 2021). Furthermore, the National Education Policy (NEP) 2020 stresses the use of technology to improve learning outcomes, emphasizing the need of students' digital literacy. Previous Indian research have found a favorable association between computer literacy and academic achievement (Rani & Mishra, 2020), hence it is critical to investigate this relationship further in specific regional contexts. As a result, this research is critical for understanding existing

gaps, guiding the incorporation of technology into instruction and ensuring that all students are similarly prepared for the digital age.

### 3. REVIEW OF RELATED LITERATURE

#### 3.1 Introduction

A review of related literature serves as a basis for comprehending the present study's theoretical and empirical backdrop and it aids in identifying gaps in prior research and demonstrating the need for the present work. Numerous studies have been undertaken both globally and in India to investigate the elements influencing academic achievement and the impact of digital or computer literacy on students' learning outcomes. This section examines important studies on computer literacy and academic achievement and offers conclusions about their interrelationships.

#### 3.2 Studies on Computer Literacy

Several scholars have investigated the topic of computer literacy among students, particularly in light of education's increasing reliance on digital technology. In a study conducted in Odisha's Balasore district, Parida (2021) discovered that incorporating computer education into secondary schools increases student interest in technology-related occupations and raises understanding about technology's real-world ramifications. The study found that when properly applied, ICT tools can foster innovative teaching practices such as cooperative learning and simulations. Similarly, Cadiz-Gabejan and Takenaka (2021) investigated the amount of computer literacy among junior high school students and discovered that students who displayed greater ability in computer-related tasks such as word processing, spreadsheets and presentations outperformed others academically. This study revealed that improving fundamental computer abilities could lead to better academic results. Monserate (2018) confirmed that students' academic success is highly related to their level of computer literacy and technology use, with teacher effectiveness and technological competence also playing important roles. Malik (2017) researched computer attitudes among senior secondary students in Haryana and discovered that boys had better attitudes and academic results than girls. The study found a link between students' computer attitudes and academic achievement.

#### 3.3 Studies on Academic Achievement

Academic accomplishment has long been a key subject of educational research, often investigated using a variety of psychological and social variables. Rani et al. (2023) investigated the association between self-concept and academic achievement among Sonipat secondary school students and discovered a strong positive correlation. Interestingly, gender and type of school management did not cause any significant variations in academic achievement, implying that personal psychological attributes such as self-concept may have a greater impact than demographic factors. Simoes, Oliveira and Nunes (2022) conducted a large-scale investigation of the influence of computer use in academic achievement. Their findings revealed that productive computer use, mothers' education and employment motivations positively influenced students' performance; however social factors such as school environment and feelings of loneliness had a detrimental impact. The study also introduced the concept of computer self-efficacy as a moderating variable.

#### 3.4 An Overview of the Studies Reviewed

According to the reviewed research, computer literacy is increasingly acknowledged as an important ability for improving students' learning and academic success. According to studies conducted by Parida (2021) and Cadiz-Gabejan and Takenaka (2021), digital skills are vital in today's education systems and a lack of these skills can be a hindrance to academic success. Meanwhile, research on academic achievement has revealed the impact of a number of characteristics, including self-concept (Rani et al., 2023), familial background (Simoes et al., 2022) and teaching efficacy (Monserate, 2018).

#### 3.5 Research Gap

Despite multiple national and international studies proving a link between computer literacy and academic achievement, there is still a considerable lack in region-specific research, particularly in semi-urban and rural areas such as Hassan District in Karnataka. Most studies have either focused on urban populations or looked at broader technology aspects without particularly measuring students' computer literacy skills. Furthermore, little attention has been paid to how background characteristics such as school administration style (government, private aided and private unaided) interact with digital abilities to influence academic success. This study intends to close these gaps by conducting a localized and extensive investigation of computer literacy among secondary school students in Hassan District and investigating its impact on academic achievement.

### 4. STATEMENT OF THE PROBLEM

The research problem recognized for the present research is: **“STATUS OF COMPUTER LITERACY AMONG SECONDARY SCHOOL STUDENTS AND ITS IMPACT ON ACADEMIC ACHIEVEMENT IN HASSAN DISTRICT.”**

### 5. OBJECTIVES OF THE STUDY

The objectives of the research are as follows:

1. To find out the relationship between Academic Achievement and Computer Literacy of secondary school students.
2. To compare the differences in the Academic Achievement of secondary school students having different levels of computer literacy.
3. To compare the differences in the Academic Achievement of secondary school students with respect to type of school management.

## 6. RESEARCH HYPOTHESES

Following are the research hypotheses in null form for the present investigation:

1. There is no significant relationship between Academic Achievement and Computer Literacy of secondary school students.
2. There is no significant difference in the Academic Achievement among secondary school students having less, average and more levels of computer literacy.
3. There is no significant difference in the Academic Achievement among secondary school students studying in government, private aided and private unaided schools.

## 7. METHODOLOGY

**Population:** The population is consists of secondary school students studying in varied schools situated at Arsikere, Hassan District, Karnataka, India.

**Sample Size:** The total number of students in all the secondary school including Government, Private Aided and Private Unaided schools was identified as the population for the present study. Giving representation of all types of management, a sample of 120 students was randomly selected from secondary schools in Arsikere.

**Tools of the Study:** Computer Knowledge Questionnaire developed by Meenakshi and Dr. Narayanaswamy M. and 'Academic Achievement' scores were collected from the Office Records from the respective schools along with Personal Proforma.

### Statistical Techniques Utilized :

Mean, Standard Deviation, Correlation and One-way ANOVA and Scheffe's Post Hoc Analysis were utilized to test the hypotheses.

## 8. ANALYSIS AND INTERPRETATION OF DATA

**Table-1:** Shows mean, standard deviation, 'r' value and level of significance on scores between Academic Achievement and computer literacy of secondary school students.

Variables	Mean	Standard Deviation	Obtained 'r' value	Level. of Sig.
Academic Achievement	77.741	13.436	0.411	**
Computer Literacy	23.758	4.445		

\*\*Significant at 0.01 level (0.254)

From the above table 1 illustrates that correlation between secondary school students' academic achievement and computer literacy scores are given. The obtained 'r' values of 0.411 are greater than table value 0.254 at 0.01 level which shows significant positive relationship between Academic Achievement and computer literacy. Hence, the stated null hypothesis is **rejected** and alternative hypothesis has been formulated that "there is significant positive relationship between Academic Achievement and Computer Literacy of secondary school students." It concludes that computer literacy is positively correlated with academic achievement of secondary school students. The students who had more literacy in computer knowledge had higher achievement in academics and vice versa.

**Table-2:** One-Way ANOVA results related to Academic Achievement scores of secondary school students with regard to computer literacy.

Variable	Source of Variance	Sum of squares	Degree of Freedom	Mean Squares	'F' Value	Sig. level
Computer Literacy	Between Groups	2425.582	2	1212.791	7.45	**
	Within Groups	19057.410	117	162.884		
	Total	21482.992	119			

'F' Table value for df 2, 117 is 4.82 at 0.01 level (\*\*).

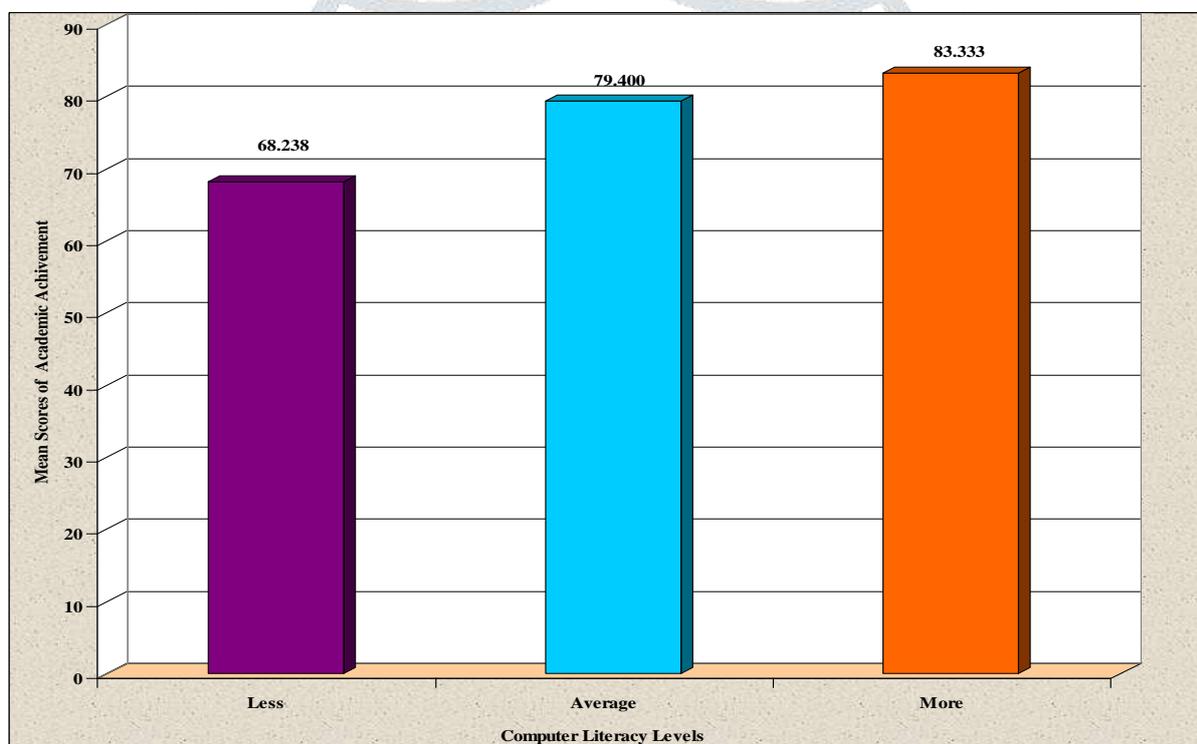
The above table 2 explains One-way ANOVA results to differentiate the significant differences in the Academic Achievement of secondary school students due to variations in computer literacy. The sum of squares and mean squares considered at 'df 2 and 117' related to Academic Achievement of secondary school students for between groups are 2425.582 and 1212.791 and for within groups are 19057.410 and 162.884 respectively from less, average and more computer literacy levels. As per the statistical applications, the obtained 'F' value of 7.45 related to Academic Achievement of secondary school students from varied levels of computer literacy is greater than the tabulated value 4.82 (df= 2, 117) at 0.01 level of confidence and thus, it shows statistically significant at 0.01 level. Hence, the null hypothesis is rejected and an alternate hypothesis has been accepted that is, 'there is a significant difference in the Academic Achievement among secondary school students having less, average and more levels of computer literacy.' To determine the significant difference in the academic achievement of secondary school students from varied levels of computer literacy of these paired mean scores, the Scheffe's post hoc test was applied and the results are presented in table-2(i).

**Table-2(i):** Scheffe’s Post Hoc Analysis on Academic Achievement scores of secondary school students from varied levels of computer literacy.

Computer Literacy levels			Mean Difference
Less	Average	More	
68.238	79.400	-	11.162*
-	79.400	83.333	3.933
68.238	-	83.333	15.095*

\*Significant at 0.05 level.

Table-2(i) explains the significant paired mean difference in Academic Achievement of secondary school students having less and average & less and more computer literacy levels and the mean differences are 11.162 and 15.095 respectively which are greater than the critical difference value at 0.05 level of confidence. It concludes that ‘there were significant differences in the Academic Achievement of secondary school students having less and average & less and more computer literacy.’ But, the academic achievement of secondary school students having average and more computer literacy levels had a similar and it was not proved statistically, since the mean differences is 3.933 which is less than the critical difference value at 0.05 level of confidence. It was concluded that, the secondary school students having more literacy in computer knowledge had higher achievement in academics when compared with students having average and less levels of computer literacy. The same has been graphically presented in fig.1.



**Fig 1:** Comparison of mean Academic Achievement scores among secondary school students with respect to computer literacy

**Table-3:** One-Way ANOVA results related to Academic Achievement scores of secondary school students with regard to types of school management.

Variable	Source of Variance	Sum of squares	Degree of Freedom	Mean Squares	‘F’ Value	Sig. level
Type of Schools	Between Groups	2563.267	2	1281.633	7.93	**
	Within Groups	18919.725	117	161.707		
	Total	21482.992	119			

‘F’ Table value for df 2, 147 is 4.82 at 0.01 level (\*\*).

The above table 3 shows One-way ANOVA results to recognize the significant differences in the Academic Achievement of secondary school students due to variations in type of schools. The sum of squares and mean squares considered at ‘df 2 and 117’ related to Academic Achievement of secondary school students for between groups are 2563.267 and 1281.633 & for within groups are 18919.725 and 161.707 respectively from government, private aided and private unaided schools. As per the statistical applications, the obtained ‘F’ value of 7.93 related to Academic Achievement of secondary school students studying in different type of schools is greater than the tabulated value 4.82 (df= 2, 117) at 0.01 level of confidence and thus, it shows statistically significant at 0.01 level. Hence, the null hypothesis is rejected and an alternate hypothesis has been accepted that is, ‘there is a significant difference in the Academic Achievement among secondary school students studying in government,

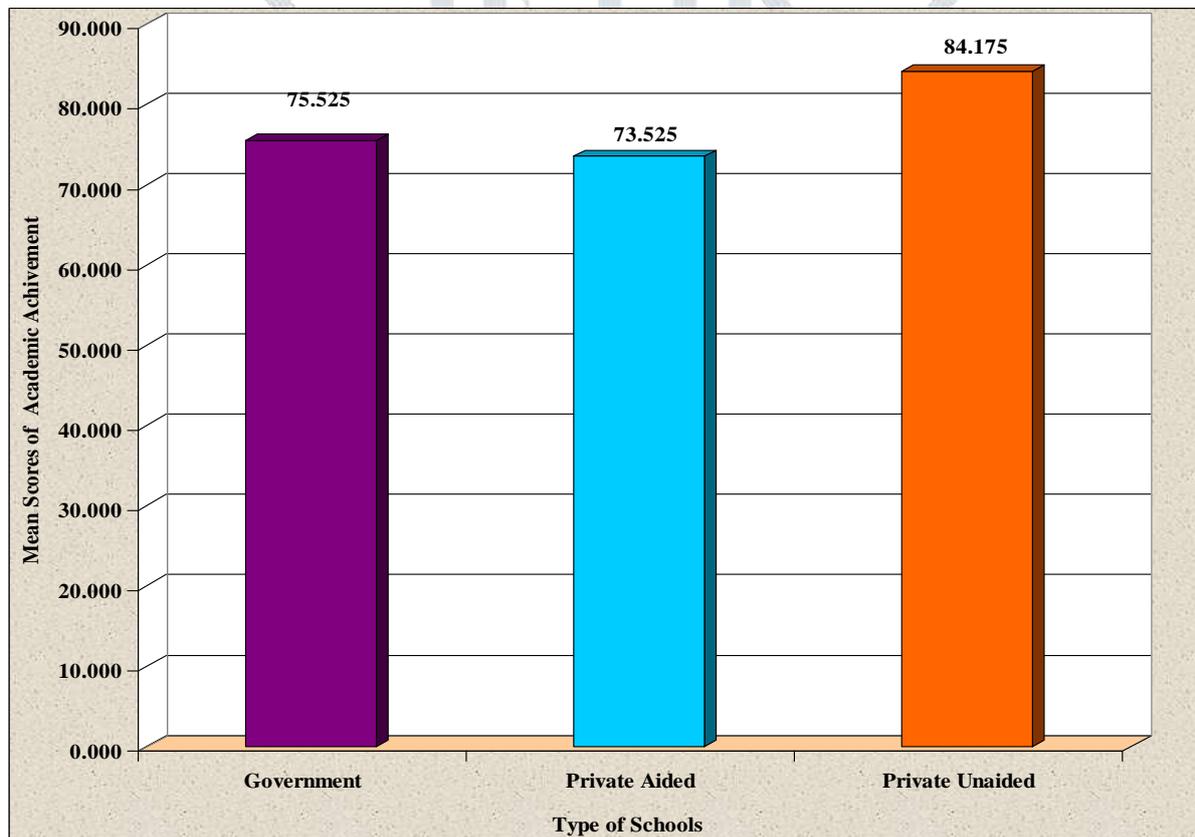
private aided and private unaided schools.’ To determine the significant difference in the Academic Achievement of secondary school students studying in varied type of schools of these paired mean scores, the Scheffe’s post hoc test was applied and the results are presented in table-3(i).

**Table-3(i):** Scheffe’s Post Hoc Analysis on Academic Achievement scores of secondary school students studying in varied type of schools.

Type of School Management			Mean Difference
Government	Private Aided	Private Unaided	
75.525	73.525	-	2.000
-	73.525	84.175	10.650*
75.525	-	84.175	8.650*

\*Significant at 0.05 level.

Table-3(i) shows significant paired mean difference in the Academic Achievement of secondary school students studying in private aided and private unaided & government and private unaided schools and the mean difference are 10.650 and 8.650 respectively which are greater than the critical difference value at 0.05 level of confidence. It concludes that ‘there was significant difference in the Academic Achievement of students studying in private aided and private unaided & government and private unaided schools.’ But, the academic achievement of secondary school students studying in government and private aided schools had a similar and it was not proved statistically, since the mean differences is 2.000 which is less than the critical difference value at 0.05 level of confidence. The Academic Achievement of secondary school students studying in private unaided schools had higher achievement in academics when compared with government and private aided schools. The same has been graphically presented in Fig.2.



**Fig. 2:** Comparison of mean academic achievement scores among secondary school students studying in government, private aided and private unaided schools.

## 9. FINDINGS

1. There was a significant and positive relationship between Academic Achievement and Computer Literacy of secondary school students ( $r = 0.411$  at 0.01 level).
2. There was a significant difference in the Academic Achievement among secondary school students having less, average and more levels of computer literacy ( $F = 7.45$  at 0.01 level). the secondary school students having more literacy in computer knowledge had higher achievement in academics when compared with students having average and less levels of computer literacy.
3. There was a significant difference in the Academic Achievement among secondary school students studying in government, private aided and private unaided schools ( $F = 7.93$  at 0.01 level). The Academic Achievement of secondary school students studying in private unaided schools had higher achievement in academics when compared with government and private aided schools.

## 10. CONCLUSION

The study confirmed that computer literacy plays a vital role in enhancing the academic performance of secondary school students. A positive correlation between academic achievement and computer literacy suggests that equipping students with computer skills contributes to better educational outcomes. Although students with higher computer literacy showed better academic performance than those with lower levels, the difference between average and high computer literacy groups was not statistically significant, hinting at a potential plateau in the benefit gained beyond a certain level of proficiency. Moreover, the type of school also influenced academic achievement, with private unaided school students performing significantly better than those in government and private aided schools. These findings emphasize the importance of both technological proficiency as well as educational infrastructure in supporting student achievement.

## 11. EDUCATIONAL IMPLICATIONS

The results of this investigation have several important implications for educational practice and also for policy. Schools should prioritize the integration of computer education into the curriculum to enhance students' digital literacy level, which is positively related with academic success. Government and private aided schools, in particular, may benefit from investing in digital infrastructure and teacher training to bridge the gap in computer literacy level with academic achievement. Additionally, educational policymakers should focus on creating equitable learning environments that provide all students -regardless of school type -with access to digital tools and resources. Teachers should be encouraged to use technology in classroom strategy to increase student engagement as well as improve academic outcomes. Overall, fostering computer literacy among secondary school students is crucial for academic development and preparing them for the digital demands of the modern world.

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