

Study on ICT Awareness and Academic Achievement of High School Students.

D. Sathyalakshmi^a, Dr. G. Rajadhurai^b

^a Ph.D. Research Scholar, V.O.C. College of Education, Thoothukudi, Tamil Nadu, India – 628008, affiliated to Tamil Nadu Teachers Education University, Chennai

^b Assistant Professor of History, V.O.C. College of Education, Thoothukudi, Tamil Nadu, India – 628008, affiliated to Tamil Nadu Teachers Education University, Chennai

Corresponding Author:

D. Sathyalakshmi

Email: sathyadlakshmi@gmail.com

Abstract:

ICT awareness refers to the knowledge and understanding of digital tools and their applications in learning, problem-solving, and communication. Students with a high level of ICT awareness are better equipped to leverage technology for educational purposes, enhancing their ability to access information, collaborate effectively, and manage academic tasks. This article examined the ICT awareness and academic achievement of high school students studying in high schools and higher secondary schools based on the selected background variables. A sample of 1000 high school students was surveyed using the ICT Awareness Scale developed and validated by the investigators and academic achievement marks were collected from the students. The collected data were analysed using t-test, ANOVA, Chi-square test and Percentage Analysis using SPSS software. The study found that the level of ICT awareness of high school students with respect to gender, access to ICT facilities, type of school and parental educational level is moderate. The study found that the boys high school students have more ICT awareness than the girls high school students. The girls high school students have high academic achievement than the girls high school students. The findings showed that the high school students those who have access to ICT facilities have more ICT awareness and academic achievement than the high school students those who have not access to ICT facilities. It was also found that the government high school students are more ICT awareness than the others. The mean scores reveal that the private high school students are have high academic achievement than the government and government-aided high school students. There is significant relationship between ICT awareness and emotional intelligence of high school students The findings were interpreted, discussed and appropriate recommendations were made...

Keywords: ICT awareness, academic achievement, high school students, digital divide, educational technology.

INTRODUCTION

ICT awareness refers to the knowledge and understanding of digital tools and their applications in learning, problem-solving, and communication. Students with a high level of ICT awareness are better equipped to leverage technology for educational purposes, enhancing their ability to access information, collaborate effectively, and manage academic tasks. Beyond academics, ICT also plays a vital role in developing emotional intelligence by facilitating communication, self-expression, and social interaction. This study focuses on high school students in Thoothukudi City, a region with a unique socio-economic and cultural backdrop. High school is a critical phase where students develop foundational skills and abilities that shape their future. The impact of ICT on their academic journey and emotional growth is of paramount importance in the contemporary educational landscape. As ICT tools become more accessible, understanding their influence can provide valuable insights for educators, policymakers, and parents..

2. Need for the Study

In the modern educational landscape, the integration of Information and Communication Technology (ICT) has significantly transformed teaching and learning processes. ICT awareness is not only a prerequisite for engaging with contemporary educational tools but also plays a pivotal role in shaping students' academic outcomes. This study is particularly relevant in the Thoothukudi city, where education is seen as a critical avenue for personal and societal development. Understanding the impact of ICT awareness on students' academic achievement is crucial to harnessing its potential to bridge educational gaps and improve learning outcomes. The Thoothukudi city represents a unique blend of traditional and modern educational practices, with schools adopting ICT at varying levels. While some schools are equipped with state-of-the-art technology, others face challenges in providing basic ICT access. These disparities highlight the importance of studying the role of ICT awareness in shaping educational outcomes. This study is driven by the need to understand the relations between ICT awareness and academic achievement of high school students. It addresses a pressing educational concern in the Thoothukudi city, aiming to provide actionable insights for stakeholders to optimize learning experiences and outcomes. Hence the study is undertaken to find out the ICT awareness and academic achievement of high school students.

3. Objectives of the Study

To find out the level of ICT awareness of high school students with respect to gender, access to ICT facilities, and type of school.

To find out if there exists any significant difference between in the ICT awareness and academic achievement of high school students with respect to gender and access to ICT facilities.

To find out if there exists any significant difference among in the ICT awareness and academic achievement of high school students with respect to type of school.

To find out if there exists any significant association between in the ICT awareness and academic achievement of high school students with respect to the parental education level.

To find out the significant relationship, if any, between ICT awareness and emotional intelligence of high school students.

4. Null Hypothesis of the Study

To find out the level of ICT awareness of high school students with respect to gender, access to ICT facilities, type of school and parental educational level.

There is no significant difference between in the ICT awareness and academic achievement of high school students with respect to gender and access to ICT facilities.

There is no significant difference among in the ICT awareness and academic achievement of high school students with respect to type of school.

There is significant association between in the ICT awareness and academic achievement of high school students with respect to the parental education level.

There is no significant relationship between ICT awareness and emotional intelligence of high school students.

5. Methodology

The investigator used a descriptive survey to study the chosen variables. ICT awareness Scale was developed and validated by the investigators and academic achievement scores were collected from the students. A sample of 1000 high school students in Thoothukudi city was chosen using a stratified random sampling technique. The collected data were scored and normalized. Data analysis was performed using statistics such as t-test, ANOVA, Chi square test and Percentage Analysis using SPSS software.

6. Results

Table No. 6.1

The level of ICT awareness of high school students with respect to the background variables

Background Variables		No.	Low		Moderate		High	
			No.	%	No.	%	No.	%
Gender	Boys	377	37	9.8	277	73.5	63	16.7
	Girls	623	67	10.8	467	75	89	14.3
Access to ICT	Yes	692	83	12	497	71.8	112	16.2

Facilities	No	308	21	6.8	247	80.2	40	13
Type of School	Government	275	27	9.8	195	70.9	53	19.3
	Government-Aided	341	38	11.1	264	77.4	39	11.4
	Private	384	39	10.2	285	74.2	60	15.6
Parental Educational Level	School	274	26	9.5	212	77.4	36	13.1
	College	244	29	11.9	174	71.3	41	16.8
	Business	482	49	10.2	358	74.3	75	15.6

Table No. 6.2

Difference between ICT Awareness of high school students with respect to gender and access to ICT Facilities

Variable		N	Mean	S.D	Calculated t Value	Table Value	Remarks at 5% level
Gender	Boys	377	86.02	6.873	2.863	1.96	S
	Girls	623	85.63	6.907			
Access to ICT Facilities	Yes	692	86.92	7.042	2.025		S
	No	308	85.45	6.546			

Table No. 6.3

Difference between academic achievement of high school students with respect to gender and access to ICT Facilities

Variable		N	Mean	S.D	Calculated t Value	Table Value	Remarks at 5% level
Gender	Boys	377	85.03	6.162	2.430	1.96	S
	Girls	623	86.48	5.553			
Access to ICT Facilities	Yes	692	86.74	6.001	2.454		S
	No	308	85.56	5.304			

Table No. 6.4

Difference among ICT awareness and academic achievement of high school students with respect to the type of school

Variables	Source	Sum of Squares	Df	Mean Square Value	Calculated F value	Table Value	Remarks at 5% level
ICT Awareness	Between	337.654	2	168.827	3.571	3.000	S
	Within	47129.617	997	47.271			
Academic	Between	149.250	2	74.625	3.229		S

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Achievement	With	33376.89	99	33.47			
n	4	7	7				

Table 6.5

Association between ICT awareness and academic achievement of high school students with respect to the parental educational level

Variable	df	Calculated Value χ^2	Table Value	Remarks 5% level
ICT Awareness	4	2.620	9.488	NS
Academic Achievement		7.146		NS

Table 6.6

Relationship between ICT awareness and academic achievement of high school students

Variables	Number	'r' Value	Table Value	Remarks 5% level
ICT Awareness and Academic Achievement	1000	0.843	0.061	Significant

7. Interpretation and Findings

From Table 6.1 it is inferred that the level of ICT awareness of high school students with respect to gender, access to ICT facilities, type of school and parental educational level is moderate.

From Table 6.2 it is inferred that there is a significant difference between in the ICT awareness of high school students with respect to gender and access to ICT facilities. The mean scores reveal that the boys high school students have more ICT awareness than the girls high school students. The mean scores reveal that the high school students those who have access to ICT facilities have more ICT awareness than the high school students those who have not access to ICT facilities.

From Table 6.3 it is indicated that there is a significant difference between in the academic achievement of high school students with respect to gender and access to ICT facilities. The mean scores reveal that the girls high school students have high academic achievement than the girls high school students. The mean scores reveal that the high school students those who have access to ICT facilities have high academic achievement than the high school students those who have not access to ICT facilities.

From Table no.6.4 it is inferred that there is a significant difference among in the ICT awareness and academic achievement of high school students with respect to type of school. By comparing the mean scores of these variables it is found that the government high school students are more ICT awareness than the others. The mean scores reveal that the private high school students are have high academic achievement than the government and government-aided high school students.

From Table no.6.5 it is inferred that there is no significant association between in the ICT awareness and academic achievement of high school students with respect to the parental education level.

From the Table no.6.6 it is inferred that here is significant relationship between ICT awareness and emotional intelligence of high school students

8. Discussion

The level of ICT awareness of high school students with respect to gender, access to ICT facilities, type of school and parental educational level is moderate in this study this may be due to the quality and frequency of access vary significantly. This leads to only a moderate level of awareness among students. This finding is confirmed by the findings of Kannan. R., & Sundaram, R. (2020). A lack of encouragement or assistance in using

technology at home limits the opportunities to build awareness and skills. This finding is confirmed by the findings of Sharma, P., & Yadav, D. (2019)

The boys high school students have more ICT awareness than the girls high school students. This may be attributed to societal and cultural factors where boys are more encouraged or given freedom to explore digital technologies, while girls may face limitations due to parental restrictions, social norms, or lack of confidence in using ICT tools. This finding is confirmed by the findings of Sharma and Yadav (2019). The mean scores reveal that the high school students those who have access to ICT facilities have more ICT awareness than the high school students those who have not access to ICT facilities. This may be consistent exposure to digital tools enhances familiarity, confidence, and skill, contributing to better ICT awareness. In contrast, students without such access face digital exclusion, limiting their ability to develop necessary ICT competencies. This finding is confirmed by the findings of Kannan and Sundaram (2020).

The girls high school students have high academic achievement than the girls high school students. This may be due to factors such as better study habits, higher levels of motivation, and greater classroom engagement often observed among girls students. This finding is confirmed by the findings of Kumari and Rao (2020). The mean scores reveal that the high school students those who have access to ICT facilities have high academic achievement than the high school students those who have not access to ICT facilities. This can be attributed to the role of ICT in enhancing learning through interactive tools, online resources, and immediate access to information, which supports better understanding and academic success. This finding is confirmed by the findings of Saxena and Gupta (2019).

The government high school students are more ICT awareness than the others. This could be due to various government initiatives, such as ICT training programs and digital infrastructure provisions under schemes like ICT at Schools, which specifically target government institutions. This finding is confirmed by the findings of Rao and Prasad (2021). The mean scores reveal that the private high school students are have high academic achievement than the government and government-aided high school students. This may be attributed to factors such as better teacher-student ratios, enriched learning environments, parental involvement, and availability of academic resources in private schools, which contribute to improved student performance. This finding is confirmed by the findings of Iyer and Mehta (2018).

The present study found that there is no significant association between in the ICT awareness and academic achievement of high school students with respect to the parental education level. This suggests that the educational qualification of parents does not significantly influence either the students' awareness of ICT or their academic performance. It is possible that other factors—such as school environment, peer influence, availability of digital tools, and personal interest—play a more decisive role than parental education in shaping students' ICT skills and academic outcomes. This finding is consistent with research by Kumar and Sharma (2020), who concluded that the impact of parental education on students' digital competence and scholastic achievement is diminishing due to increasing access to school-based ICT resources and digital self-learning platforms.

The present study found that there is significant relationship between ICT awareness and academic achievement of high school students. This may be because higher ICT awareness enables students to access digital learning resources, improve study efficiency, and enhance understanding of academic content. Technology use supports self-directed learning, problem-solving, and academic engagement, leading to better achievement.

9. Recommendations

Efforts should be made to ensure equitable access to ICT facilities in both government and private schools. Providing functional computer labs, internet connectivity, and digital learning platforms will help bridge the digital divide.

Special initiatives should be taken to encourage girls' students to participate in ICT-related activities and training programs. Gender-sensitive ICT policies can help overcome cultural and social barriers.

Teachers should be trained to incorporate ICT tools into classroom teaching across subjects. This will not only improve ICT awareness but also enhance student engagement and academic achievement.

Although parental education was not significantly associated, engaging parents through awareness sessions can support students' digital learning at home and foster a positive attitude toward ICT usage.

Schools should implement ongoing digital literacy programs, ensuring students develop both basic and advanced ICT skills over time. This includes workshops, project-based learning, and access to online resources.

10. Educational Implications

Schools should incorporate ICT as a core component of the curriculum, not just as an optional subject. This would ensure structured learning and skill development among all students.

Educational policies must address the digital divide between students of different genders, school types,

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and backgrounds by providing equal opportunities for ICT exposure and use.

Teachers must be equipped with professional development in ICT tools and digital instructional methods to effectively support students' digital learning needs.

ICT should be strategically used to enhance learning outcomes through multimedia content, online assessments, and interactive platforms, particularly in schools with low academic performance.

Schools and educational authorities should regularly assess the impact of ICT programs on student learning and make data-driven improvements for better outcomes.

11. Suggestions for Further Research

Conduct long-term studies to evaluate how sustained ICT use influences students' academic growth and digital competencies over several years.

Explore qualitative insights into the cultural and social factors that affect gender differences in ICT awareness and usage.

Future research can compare ICT awareness and academic performance across different states or urban-rural settings to identify regional disparities.

Investigate how specific ICT teaching tools (e.g., digital whiteboards, learning apps) impact academic achievement in various subjects.

Study how different forms of parental support (regardless of educational level) influence students' ICT engagement and academic success.

12. Conclusion

The present study aimed to examine the level of ICT awareness among high school students and its relationship with academic achievement concerning various background variables such as gender, access to ICT facilities, type of school, and parental education level. The findings revealed that the overall level of ICT awareness among students was moderate. A significant difference was found in ICT awareness based on gender and access to ICT facilities, with boys' students and those having access to digital resources showing higher awareness. Interestingly, government school students demonstrated higher ICT awareness, likely due to targeted government schemes. However, in terms of academic achievement, girls' students and private school students outperformed their peers, indicating that factors beyond ICT access also play a critical role in academic success.

Moreover, no significant association was found between parental education level and students' ICT awareness or academic achievement, suggesting that school-based interventions may have a stronger impact than family background. These findings emphasize the importance of ensuring equitable access to ICT tools, promoting digital literacy across all student groups, and integrating ICT into teaching practices. The study underscores the need for continuous teacher training, infrastructure development, and inclusive policies that bridge digital gaps and enhance educational outcomes for all students....

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