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ICT IN MANIPUR SCHOOLS: THE ANALYSIS OF THE SCHOOLS, WHICH ARE EQUIPPED WITH COMPUTERS AND INTERNET CONNECTION IN TERMS OF THE UDISE DATA.

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Keywords	Abstract
Digitalization, Connectivity, Infrastructure, Accessibility, Inequality, UDISE	Digital technology has also been incorporated in learning institutions, and it has greatly helped in enhancing the effective teaching and learning processes and access to learning materials. The paper study on the present status and progress of the computer and internet connected schools in the district level in Manipur in the period 2020-21 to 2024-25 using secondary data acquire from Unified District Information System for Education Plus (UDISE+). The research employed a descriptive research design to study the distribution of digital amenity in the schools of different districts and to investigate the variation in digital amenity between the valley and hill districts in the region. The findings display a progressive growth in the rates of availability of digital access in educational establishments, with the steady growth observed in the number of schools that have reported to have access to computers and internet connectivity over the five-

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year period. Imphal West, Imphal East, Bishnupur and Thoubal districts show quite high figures of schools that have digital facilities by contrast of Kamjong, Pherzawl, Tengnoupal and Tamenglong. The results reveal that there is a digital divide in a region, as valley areas tend to have higher digital infrastructure than the hill districts. The study suggests that the implementation of specific policy measures and infrastructural upgrades to enhance the use of digital connections in schools, especially in hill districts, to achieve quality access to digital learning.

Introduction

The emergence of fast digital technology has influenced the world of education significantly. The Internet and computers are now the keys to information accessibility, enhanced communication and assisting in school education. With the integration of digital technologies, students will have access to learning materials and will be able to interact with each other and with teachers, thus being able to learn the skills that will allow them to become members of the modern knowledge-based society (Hussain, 2021; Singh and Sharma, 2023). Researchers have stressed that the classroom teaching process can be changed to be more interactive with the help of computers and internet connection, and students can have opportunities to explore a variety of sources of knowledge that is not limited by textbooks (Tondeur et al., 2017; Voogt et al., 2015).

The increasing role of digital technologies in education was covered in numerous global and national research works. Use of internet and access to computers in institutions has been linked with high learning experiences, better learning engagement and increased collaborative learning (Livingstone and Helsper, 2007; Warschauer, 2004). With the internet connection, teachers and students are able to interact, share knowledge, and use the digital learning platforms to carry out learning activities (Selwyn, 2016). On the same note, studies have revealed that technology learning environments have the capability of developing critical thinking, problem solving, and digital literacy in students (Kozma, 2005; Ertmer and Ottenbreit-Leftwich, 2010).

The importance of digital technologies in the school education has become a growing concern in the Indian setting over the past few years. Different national programs were initiated to popularize the use of computers and the internet connection in the schools, such as the Digital India program and the National Education Policy 2020, which focuses on enhancing the digital infrastructure and facilitating learning through technology in educational institutions. The aim of these initiatives is to guarantee schools access to computers, internet connectivity and digital resources with the potential to support innovative teaching practices and increase the learning opportunities of students.

Nevertheless, some studies have indicated that there is a digital divide on access to educational technology especially between urban and rural and developed and less-developed regions

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(Warschauer, 2004; Selwyn, 2016). In India, the differences between digital infrastructure across states and districts remain a factor that affects the access to computers and internet infrastructure in schools (Aman and Roopali, 2017). Although there are schools that have access to computers and internet connections, there are still those schools that have their share of infrastructure, connection and technological problems.

The Unified District Information System of Education Plus (UDISE+) is a system that offers extensive information on the infrastructure of schools, such as computer accessibility and internet facilities in schools. This information can assist researchers and policymakers to comprehend the state of digital access in schools and determine the lack of technological resources in this area. Geographical conditions and infrastructural constraints can be used in states like Manipur in distributing the digital facilities in the districts. Valley districts are normally well connected and well-infrastructure than the hill districts which are usually affected by the terrain and telecommunication availability.

In this backdrop, there is a need to check the availability and distribution of schools with computer and internet connection in the various districts of Manipur. Knowledge of the district level of such facilities and their development rates can be used to shed some light on the extent of digital readiness among schools in the state. Thus, the current paper examines the district-level conditions of schools with computer and internet connection in Manipur in 2020-21 to 2024-25, according to the data received as a result of UDISE+. The paper also makes a comparison of facilities available among valley and hill districts in terms of availability and also determines differences in distribution of digital resources among the districts.This kind of analysis is needed to understand the existing developments in the area of digital access in school education as well as to point out where additional policy action and infrastructural assistance could be necessary.

Study Objectives

1.To analyze the district-wise condition of schools that have computer and internet connection in Manipur.

2.To examine the increase in schools with computer and internet connection in the years 2020-21 to 2024-25.

3.To compare computer and internet connection that is available in valley and hill districts Manipur.

4.To determine the highest and lowest performing districts in regard to the number of schools that are connected with computer and internet.

Research Questions

According to the purposes of the research, they are the following research questions:

1.What is the status of the schools in Manipur with computer and internet connection on district wise basis?

2.What are the changes in the number of schools that are connected with computers and internet connection between 2020-21 to 2024-25?

3.Does a valley district differ with a hill district in terms of access to computer and internet connection in schools?

4.What are the highest and the lowest number of schools that had computer and internet connection in the study period?

Review of Literature

Availability of computers and internet connection in schools has gained a significant status in the contemporary education systems. Digital technologies provide students with opportunities to use a variety of learning materials, to communicate with the teacher and classmates, and to be engaged in the interactive learning process. A number of scholars have emphasized how the availability of computers and the internet enriches the teaching learning activities and instills digital literacy among the learners (Kozma, 2005; Selwyn, 2016). Research has also drawn a conclusion that technology-based learning established environments can enhance student engagement, motivation, and the quality of education in general.

The studies of computer and internet application in school education find that digital resources help in accessing numerous educational materials (such as multimedia content, online libraries, learning platforms, etc.) (Hussain, 2021). With the internet connectivity, teachers and students have an opportunity to cooperate, exchange knowledge, and engage in virtual learning (Singh and Sharma, 2023). On the same note, Livingstone and Helsper (2007) noted that access to internet at school is also helpful in nurturing information seeking skills of students, as well as in promoting autonomous learning.

A number of studies have been done in the Indian context and they explored the integration of digital technologies in school education. The research conducted by Aman and Roopali (2017) on the use of ICT in schools of India revealed that computers and other internet connections are significant in enhancing the instructional activities and increasing the learning opportunities of the students. Another issue that was noted in the study was the problem of insufficient infrastructure, absence of technical support, and differences in accessibility to digital facilities among schools.

Digital divide has been a point of interest in the research sphere of education. Warschauer (2004) noted that the unequal access to digital technologies may introduce an unequal educational opportunity especially in urban and rural areas. Equally, Selwyn (2016) suggested that disparities in infrastructure, connectivity, and technological resources also play a role in causing differences in the accessibility and successful implementation of digital technologies at schools. Such differences usually impact the capacity of students to take advantage of digital educational settings.

In India, the growth of digital platform in schools has been aided by a number of policy programs geared towards enhancing technology-based education. Nevertheless, the research shows that not all states and districts have equal access to computers and internet connectivity. The

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problem is that, some schools have sufficient digital resources, and some others continue to experience issues regarding connection and infrastructure (Ertmer & Ottenbreit-Leftwich, 2010.). Availability of computers and internet in the schools is thus seen as a significant pointer of digital preparedness in the education system.

The Unified District Information System of Education Plus (UDISE+) presents detailed information on school infrastructure including the information on schools that have access to computers and the internet. These data will allow researchers to investigate the regional difference and determine the trends in the allocation of digital facilities within the districts. The accessibility of computers and internet connection in schools is significant especially in geographically diverse areas like Manipur where infrastructural facilities might be different in terms of valley and hill districts.

In spite of a number of studies that have been done to study the ICT integration and digital access in the Indian schools, little work has been done on the analysis of schools with computer and internet connectivity at the district-level within particular states. Thus, studying the status of such facilities and their development trajectory in the district level in Manipur will be useful in understanding the progress in digital access in school education and enabling pinpointing of the areas where more efforts will be needed.

Methodology

The present study will employ a descriptive research approach to examine the status and evolution of computer and internet-connected schools in Manipur. The report seeks to assess the variations in trends and disparities in the provision of digital facilities in schools over a five-year period across districts and regions.

To carry out the investigation, the secondary data was sourced out of the Unified District Information System for Education Plus (UDISE+), Government of India. The research used data on the supply of computers and internet connectivity in schools, in terms of district, which was extracted in the Directorate of Education (Schools), Manipur. The data is over a period of five years, 2020-21 to 2024-25. The reason why a school lacks a fully furnished computer lab may simply be because it demonstrates that computers and the internet are available in the UDISE statistics. It implies that the schools stated that they had one or more computers and access to the internet during the academic year in question.

Frequency distribution, percentage analysis, and comparison analysis are descriptive statistical techniques that were used to analyse the data obtained. A survey of the performance trends at the district was conducted to establish the best performing districts and the worst performing districts. To get an insight into the differences between the availability of the computer and internet facilities in schools, a comparison was made between the valley districts and the hill districts. The percentage of growth in the five years were determined in an attempt to determine the increment of digital access in school districts.

Results and Analysis

This section is concerned with data analysis and interpretation regarding schools with computer and internet connection in Manipur between the year 2020-21 to 2024-25. The data has been analysed with the help of proper statistics like frequency, percentage and comparative analysis. The results are given in objective form in order to have a clear picture regarding the distribution as well as the growth trends and the disparities in the availability of computer and internet facilities in schools at each district level. The data presented in a systematic and meaningful way have been done using tables and interpreted afterwards to bring out the major patterns and trends.

Objective 1: To analyze the district-wise condition of schools that have computer and internet connection in Manipur.

The given section provides the analysis of the district-level data on schools with a computer and internet connection in Manipur in the 2020-21 to 2024-25. The purpose of the analysis will be to investigate the distribution, growth patterns and geographical imbalances of accessibility of digital facilities in schools within districts.

The data were retrieved through Unified District Information System of Education Plus (UDISE+) namely this system records all details on school infrastructure in the entire of India. The district-wise analysis assists in determining the trends in the access of computer and internet facilities and the differences between districts.

Table 1: District-wise Status of Schools Having Computer and Internet Connection in Manipur (2020–21 to 2024–25)

District	2020–21	2021–22	2022–23	2023–24	2024–25
Bishnupur	62	123	161	165	167
Chandel	18	25	36	32	35
Churachandpur	91	125	82	114	116
Imphal East	134	132	139	159	161
Imphal West	157	177	209	227	252
Jiribam	4	35	53	74	77
Kakching	46	111	110	147	151
Kamjong	3	17	15	11	11
Kangpokpi	55	69	94	105	118
Noney	17	24	21	24	44

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Pherzawl	4	13	23	23	22
Senapati	41	42	148	181	222
Tamenglong	16	25	26	27	33
Tengnoupal	13	NA	23	23	23
Thoubal	77	NA	92	120	209
Ukhrul	29	NA	60	67	68

Note: *NA indicates that the district was not reported separately in the 2021–22 dataset.*

Table 1 illustrates that the district-wise analysis indicates a consistent increase in the number of schools in Manipur equipped with computers and internet connections from 2020-21 to 2024-25. The Imphal West district consistently possesses the highest quantity of schools equipped with computer and internet facilities, increasing from 157 schools in 2020-21 to 252 schools by 2024-25. Imphal East, Bishnupur, Kakching, and Senapati are other districts demonstrating significant progress during the research.

There has been a significant growth in Senapati district where there has been an increase of 41 to 222 schools that currently have computers and access to the internet. Likewise, the Thoubal and Jiribam districts are improving significantly over the span of 5 years.

However, in most districts such as as Kamjong, Pherzawl and Tamenglong, the number of students with access to computers and the internet in their education institutions remains relatively low. These rural areas are located in rugged geography that geological and infrastructural issues might obstruct the development of any digital connectivity. The data show that the state of digital access at schools in Manipur has significantly changed in the last five years, although there are still gaps in the access to digital infrastructure in the different districts.

Objective 2. To examine the increase in schools with computer and internet connection in the years 2020-21 to 2024-25.

To determine the digital access development in schools, the annual increase in the count of schools with computer and internet connection in Manipur was examined using UDISE data of 2020-21 to 2024-25.

Table 2: Year-wise Growth of Schools Having Computer and Internet Connection in Manipur

Year	Schools Having Computer and Internet	Increase from Previous Year	Growth (%)
2020–21	767	–	–
2021–22	918	151	19.69

2022–23	1292	374	40.74
2023–24	1499	207	16.02
2024–25	1709	210	14.01

The analysis by the year indicates that the number of schools with computer and internet connection in Manipur has been increasing steadily throughout the five-year period (2020 - 2024) as indicated by the table no. 2. As of 2020-21, 767 schools had reported having access to a computer and internet connection. The number rose to 918 schools in 2021-22, which represents a growth of 151 schools (19.69).

There was a drastic growth in 2022-23 as the total schools with computer and internet connection stood at 1292, which is an increment of 374 schools (40.74) over the past year. This dramatic increase could be connected to the spread of digital education programs and more attention to learning supported by technology after the COVID-19 pandemic.

It would keep rising during 2023-24 when it rose to 1499 schools representing the growth of 207 schools (16.02%). This was further raised in 2024-25 to 1709 schools and another 210 schools (14.01%) reported that they had both computer facilities and internet facilities.

In general, the analysis reveals that the access to the digital in schools has grown significantly in Manipur over the period of the study. The steady rise in the number of schools with computer and internet connection indicates increasing activities to foster digital infrastructures and technology-based learning in school education.

Objective 3. To compare computer and internet connection that is available in valley and hill districts Manipur.

To analyse them, districts were categorised into valley and hill districts. Imphal West, Imphal East, Bishnupur, Kakching and Jiribam are known as valley districts and the rest were included in the category of hill districts. The UDISE data on 2020-21 and 2024-25 were used to carry out the comparison.

Table 3: Comparison of Schools Having Computer and Internet Connection in Valley and Hill Districts (2020–21 to 2024–25)

Region	2020–21	2021–22	2022–23	2023–24	2024–25
Valley Districts	403	578	672	772	808
Hill Districts	364	340	620	727	901
Total	767	918	1292	1499	1709

The comparison of the valley and hill districts as the table 3 indicates in the availability of computer and internet facilities in Manipur schools demonstrates some important patterns. As of 2020-21, valley districts had 403 schools with computer and internet connection and hill districts had 364 schools. This shows that the level of digital access in schools is slightly higher in valley districts at the beginning.

As of 2021-22, the difference has increased further in that valley districts registered 578 schools, and 340 schools in hill districts. This could be explained by the relatively larger figure in the valley districts due to superior infrastructure, higher telecommunication access, and higher concentration of learning institutions in the valley districts.

Since 2022-23, however, there has been a good level of improvement in the hill districts. Schools with computer and internet connection in the hill districts also registered a considerable rise in the number, 620 in 2022-23, 901 in 2024-25. This has been enhanced through the growth rate in districts like Senapati, Kangpokpi and Churachandpur.

In 2024-25, it was reported in hill districts that there were 901 schools connected to computers and the internet whereas the valley districts had 808 schools. This means that the growth of the digital facilities has slowly penetrated the remote areas, and thus they have helped reduce the digital disparities between valley and hill districts.

In general, the results indicate that, despite the initial difference in the digital access of the valley districts, over the last years, the hill districts have made a substantial improvement, which indicates the ongoing attempts at the development of digital access to school education on a state level.

Objective 4: To determine the highest and lowest performing districts in regard to the number of schools that are connected with computer and internet.

This objective will determine the best and the worst performing districts in Manipur in regard to the presence of computer and internet connection in the number of schools. The analysis assists in comprehending the difference in availability of digital facilities among districts and the areas with more and less good access. The identification of these districts leads the study to some insights of the regional discrepancies and assists in seeing districts that need more attention to ameliorate digital infrastructure in schools.

Table 4: Top 5 Districts in Schools Having Computer and Internet Connection (2024–25)

Rank	District	Number of Schools
1	Imphal West	252
2	Senapati	222
3	Thoubal	209

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| 4 | Bishnupur | 167 |
| 5 | Imphal East | 161 |

Table 5: Lowest 5 Districts in Schools Having Computer and Internet Connection (2024–25)

Rank	District	Number of Schools
1	Kamjong	11
2	Pherzawl	22
3	Tengnoupal	23
4	Tamenglong	33
5	Chandel	35

Table 4 and Table 5 were used to measure the location of schools with computer and internet connectivity in Manipur and as the results show in Table 4 and Table 5, there is a clear spatial distribution. The most concentrated districts containing most such schools are mainly valley districts with the smallest number of schools having computer and internet connection mainly residing in hilly areas.

Imphal West is one of the best performers followed by Senapati, Thoubal, Bishnupur and Imphal East. Among the five districts, three of them, namely Imphal West, Imphal East, and Bishnupur, are located in the valley region with better infrastructure, population density, and better connection facilities. Most of the schools and other institutions of learning are concentrated on the valley areas and this could be the reason why there are more computers and internet connectivity in the schools.

Though Senapati and Thoubal are ranked top, the position can be attributed to the recent developments in the establishment of the digital infrastructure in educational institutions. Over the last five years, Senapati has seen incredible increase in proportion of schools with computer and internet connection implying the continued process of digital infrastructure improvement in districts traditionally under-connected.

On the other hand, the districts that have the least number of schools with computers and internet connectivity are mainly hill districts, as demonstrated in table 5 below including Kamjong, Pherzawl, Tengnoupal, Tamenglong, and Chandel. These districts are mostly geographically remote because of unfavorable topography, inadequate transport systems, and poor telecommunication systems. Such circumstances can offer difficulties in installation and maintenance of digital infrastructure in institutions of learning.

Discussion

The current research focused on the situation and progress of the Manipur schools in terms of computer and internet accessibility during the time frame of 2020-2024. The results indicate that schools with computer and internet facilities reported significantly in the last five years. This positive aspect signifies the slow improvement of the access to school education in the state with the help of digital access. The rise in access to computers and internet in schools can be explained by the national education programs and the promotion of the use of technologies in learning, including the Digital India initiative and the National Education Policy (NEP) 2020, which plans to enhance the digital connectivity of learning institutions.

According to the study findings, there is a geographical inaccessibility to computer and internet resources among the different districts. It also happens that, Valley districts like Imphal West, Imphal East and Bishnupur have always been the highest performing districts in provision of computers and internet connection in schools. These will be mainly characterized by better infrastructure, increased telecommunications facilities, and better concentration of educational facilities. Conversely, in most of the hill districts, such as Kamjong, Pherzawl, Tengnoupal and Tamenglong, the percentage of schools that have computer and internet connectivity is still lower.

These results match the previous works concerning digital access, as well as the educational digital divide. The difference in digital technology access is a symptom of more geographical and infrastructure disparities (Warschauer, 2004; Selwyn, 2016). On the same note, a research done in the Indian context has established inequalities in digital resources access between the schools in various geographical areas (Aman and Roopali, 2017).In spite of the differences, it can be concluded that the vast increase in a particular number of districts throughout the research period indicates that, though at a very slow pace, the transition to the development of digital resources in the educational field is justified. The fact that more and more schools are linked to computers and the internet shows that there is a growing appreciation to the value of the digital access in order to support learning and teaching. That said, the fact that regions disparities still exist means that additional legislative actions and improved infrastructural assistance are needed to make access to digital potential in schools even in remote hill districts equitable.

Conclusion

In the current analysis, UDISE + data were reviewed to determine the district level status and progress of schools, which are connected to computers and the internet in Manipur, between 2020-21 and 2024 25. The findings show that the number of schools reporting access to computer and internet resources is gradually growing throughout the five-year timeframe, which signifies that there is an improvement in the development of digital access to education. The median of districts like Imphal west and Imphal east, Bishnupur and Thoubal always depict a larger number of schools with computers and internet connection which means that the infrastructure and connectivity of these regions was relatively strong.

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The report indicates that there are very large geographical variations in availing digital facilities in the districts. A number of the hilly regions, such as Kamjong, Pherzawl, Tengnoupal and Tamenglong have relatively less schools that have computer connectivity and internet connectivity, demonstrating the existence of a digital divide. Although some improvement has been witnessed in certain hill districts in the recent years, there is a great need to give more attention on enhancing the digital infrastructure and equitable provision of access to computer and internet in schools in all the districts of Manipur.

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