



Mapping the Digital Divide in the School Education of Thailand

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97.47* percent of
schools have internet
access.

Approximately **242** schools do not have internet access. **93%** of these
unconnected schools have less than **100** students.

** Out of 78.65 percent of academic institutions*

29 percent of schools do not have access to the internet through optical fiber.

**17 students share 1
computer in the school.**

Large variations in number of students per computer can be noticed across the provinces.

**Only 16 percent of
households have access to
the computer.**

Percentage of computer using population continues to decline.

A large proportion of students do not have meaningful computing skills.

54% of **16 -19** years population did not use computer for creating presentations.

**75 percent of households
have connected to the
internet.**

98 percent households are under internet coverage.

75 percent of the households depend on mobile broadband (3G and above) to access the internet.

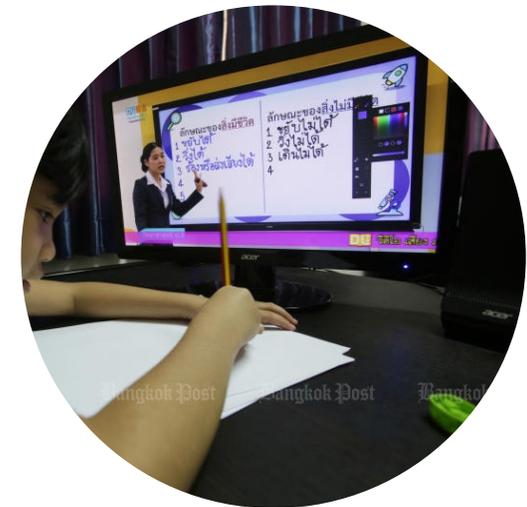
Cost of mobile broadband is higher than fixed broadband for long term eLearning at home.

A large proportion of students do not use the internet for eLearning activities.

97% of **16 -19** years population used internet for social media compared to **17%** for eLearning.

Background

- COVID-19 affected approximately **12 million students** enrolled at pre-primary, primary, lower-secondary, and upper-secondary levels of education (UNESCO, 2020).
- MoE applied distance learning television model for primary schools and online learning for secondary schools during COVID-19.
- Three out of four scenarios (onsite, on-air, online, and on-demand) **would need access to digital devices** to continue education.
- Second wave of COVID-19 (2020-21) resulted in school closures in 28 provinces.
- **Students with access to digital devices and connectivity were less impacted than those without.**



School interruptions in general affects the academic performance of the students.

Examples from impact studies

- **2011 floods of Thailand impacted O-net examination scores (Thamtanajit, 2020).**
- **During COVID-19, an average three-month school closure would lead to loss of 0.3 years of schooling and an estimated 1% decline on the learning levels measured by PISA scores (Azevedo, Hasan, Goldemberg, Iqbal, & Geven, 2020).**
- **Reduction in annual learning in lifetime due to school closures**

Study objectives

UN country team in Thailand conducted a comprehensive mapping of the digital divide in school education with a three-fold objective to:

- 1. Scope, map, and analyze available data across relevant ministries** on access to digital devices, availability and use of internet, status of school connectivity, and quality of access to better understand the infrastructural challenges and opportunities for e-learning faced by some communities and disadvantaged groups in Thailand.
- 2. Review and assess existing ICT initiatives** – both specifically purposed to support e-learning and education and those not specifically purposed but still essential in enabling it - to identify potential good practices as well as gaps which require further assistance to bridge.
- 3. Develop a set of evidence-based policy recommendations** on required infrastructure, including identification of standards where appropriate, to help bridge this digital divide and support Thailand in keeping up with improved and inclusive technologies - in line with its vision of a digital nation.

Limitations

- The study was unable to cover students and schools that are not in the formal education system (e.g. students in migrant learning centers)
- Access to internet information, computer for pedagogical purpose was analyzed only for schools under OBEC's jurisdiction.
- Findings rely on secondary and available data sources only.

State of Data on Connectivity and ICT Infrastructure in the Schools

Jurisdiction	Total Institutions #	Total Students	Schools (%)	Students (%)	Percentage of Schools with Available Data		
					Desktop for Management	Computers for Pedagogical Purpose	Internet Type
Office of the Basic Education Commission	29871	6653160	78.65	52.07	99.2	99.2	99.2
Office of the Private Education Commission*	4137	2226564	10.89	17.43	99.4	99.4	-
Ministry of Higher Education, Science, Research and Innovation	155	1729973	0.41	13.54	-	-	-
Office of Vocational Education Commission	913	1012580	2.40	7.93	96.3	96.3	-
Ministry of Interior	1733	747084	4.56	5.85	-	-	-
Bangkok Metropolitan Administration	438	282825	1.15	2.21	99.8	-	-
The Bureau of National Buddhism	406	35967	1.07	0.28	-	-	-
Border Patrol Police General Headquarters	218	26417	0.57	0.21	89.9	88.5	-
Ministry of Public Health: Office of the Permanent Secretary	39	19122	0.10	0.15	-	-	-
Ministry of Tourism and Sports	29	19014	0.08	0.15	37.9	37.9	-
Ministry of Culture	16	10868	0.04	0.09	-	-	-
Ministry of Defense ****	19	7881	0.05	0.06	-	-	-
Ministry of Transport	2	2932	0.01	0.02	-	-	-
Police Cadet Academy****	1	959	0.00	0.01	-	-	-
Mahidol Wittayanusorn School	1	715	0.00	0.01	-	-	-
Police College of Nursing	1	276	0.00	0.00	-	-	-
Ministry of Social Development and Human Security	2	159	0.01	0.00	-	-	-
Total	37981	12776496					

Source: Ministry of Education, 2020 for academic year 2019.

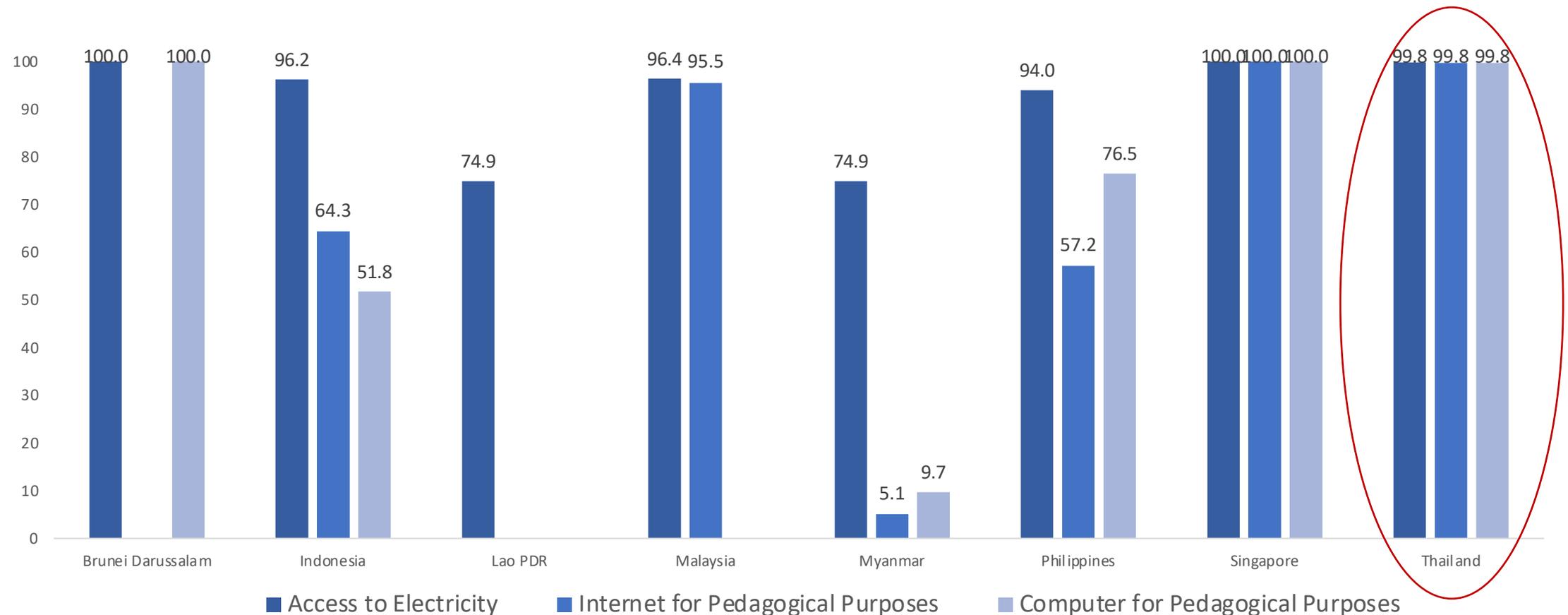
Overview of data used to generate evidence

S.N.	Section	Owner of Data	Survey/Studies	Disaggregation
1	Access to digital devices at the household level	National Statistical Office, 2019, 2020a, 2020b; Office of the National Economic and Social Development Council, 2020,	Survey of the use of information technology and communication in the household, 2019; Survey on television ownership, 2019; Gross Regional and Provincial Product Chain Volume Measure 2018	National, Regional, Provincial
2	Access to digital devices and connectivity among students at home	National Statistical Office, 2019, 2020a, 2020b, OECD, 2018	Survey of the use of information technology and communication in the household, 2019; PISA 2018 Database	National, Gender, school ownership, school location, socioeconomic status
3	Access to digital devices and internet connectivity among students at school	Ministry of Education, 2020; NBTC, 2020; MDES, 2020; Equitable Education Fund, 2020	Data request for the study	National, Regional, Provincial
		OECD, 2018	PISA 2018 Database	National, Gender, school ownership, school location, socioeconomic status,
4	Adequacy of digital devices and teachers' readiness	OECD, 2018	PISA 2018 Database	National, Gender, school ownership, school location, socioeconomic status

Access to digital devices and connectivity

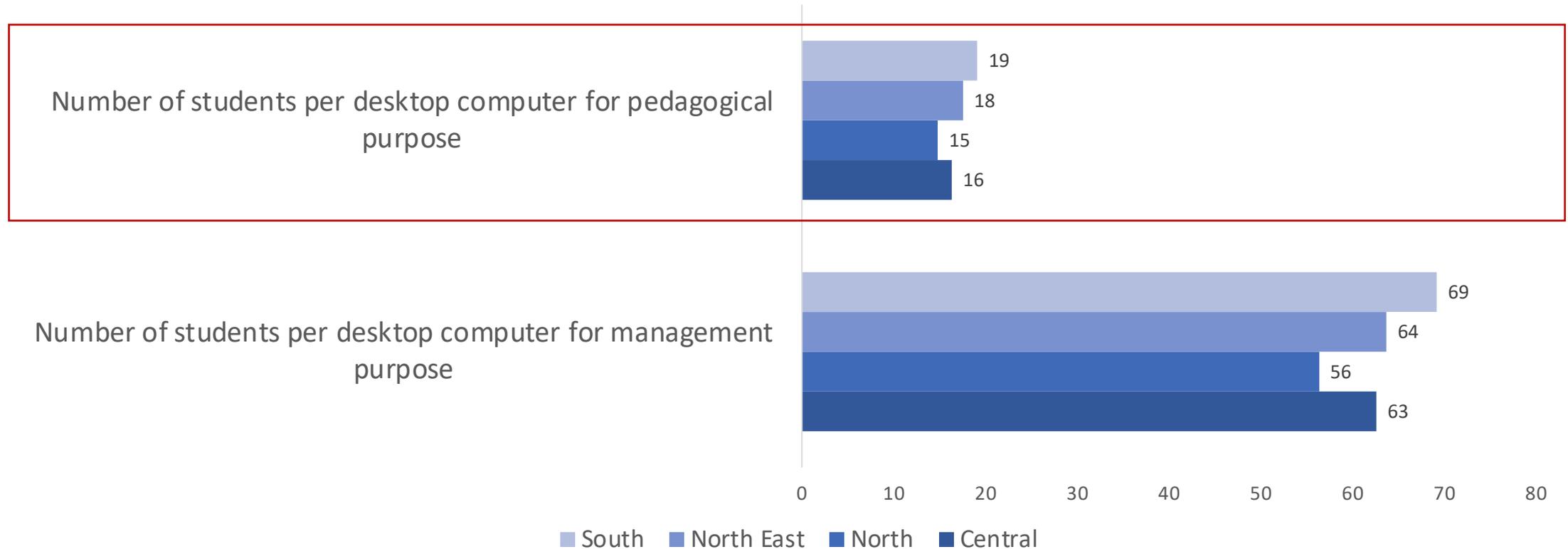


99 percent schools in Thailand have access to electricity, computer, and internet



Source: UIS (2020)

Regional disparities persist on access to computing device



Source: Ministry of Education, 2020

On average, **17** students shared one computer in Thailand in their school

- **Region:** South (1:19), Northeast (1:18), Central (1:16), North (1:15)
- **Province:** Narathiwat and Yala (1:27), Central provinces like Ang Thong, Sing Buri (1:12)

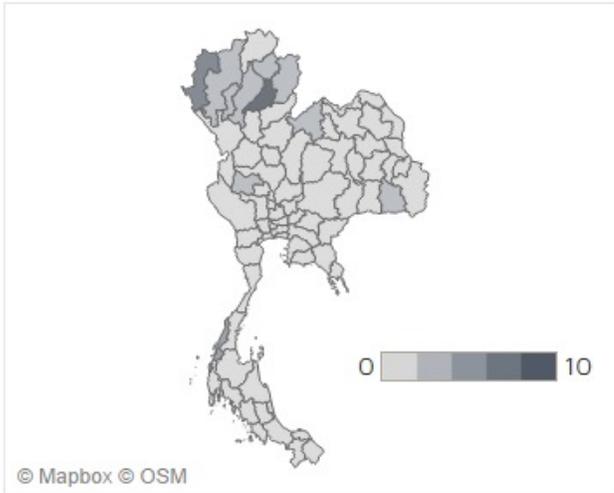
Example

Small Schools from North and Northeastern Provinces lack connectivity.

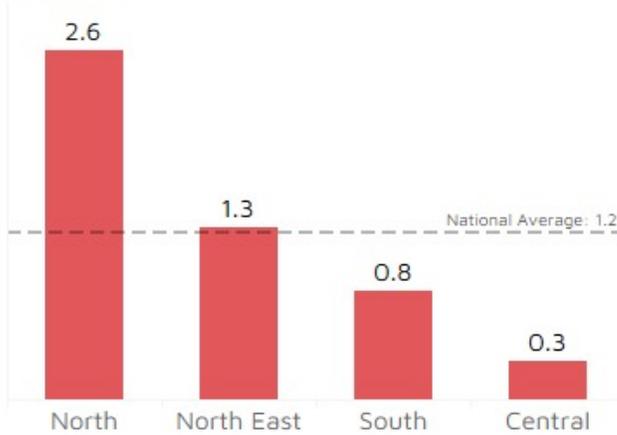
- **99.18** percent schools are connected to the internet. (MoE)
- Connectivity rate is **lower than average** in **northern** provinces of Phrae, Mae Hong Son, Lampang, Nan, and Phayao.
- **Northeastern** provinces of Loei, Si Saket, Yasothon, Nong Khai, Chaiyaphum, Roi Et, and Bueng Kan had more schools not connected to the internet than other provinces from the region.
- Nearly **two third** of the unconnected schools have less than **100** students.

State of access to computer and internet connectivity in Thai Schools

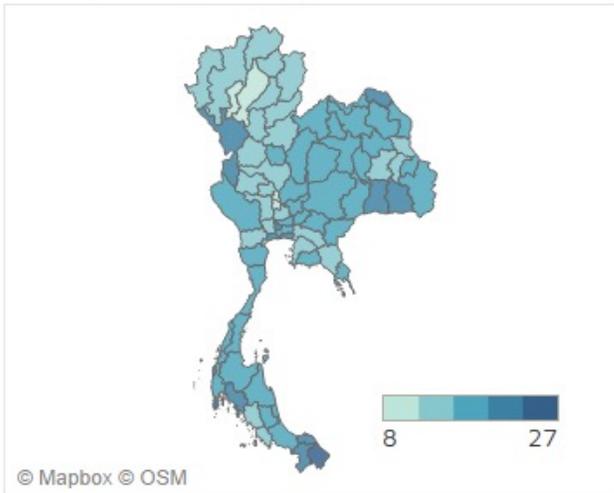
Percentage of schools without internet access



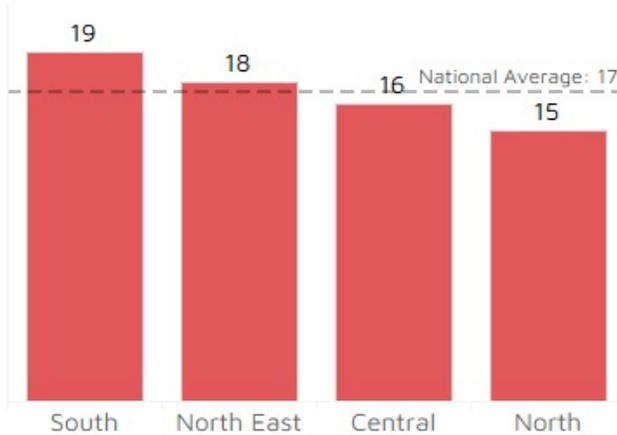
Percentage of schools without internet access by region



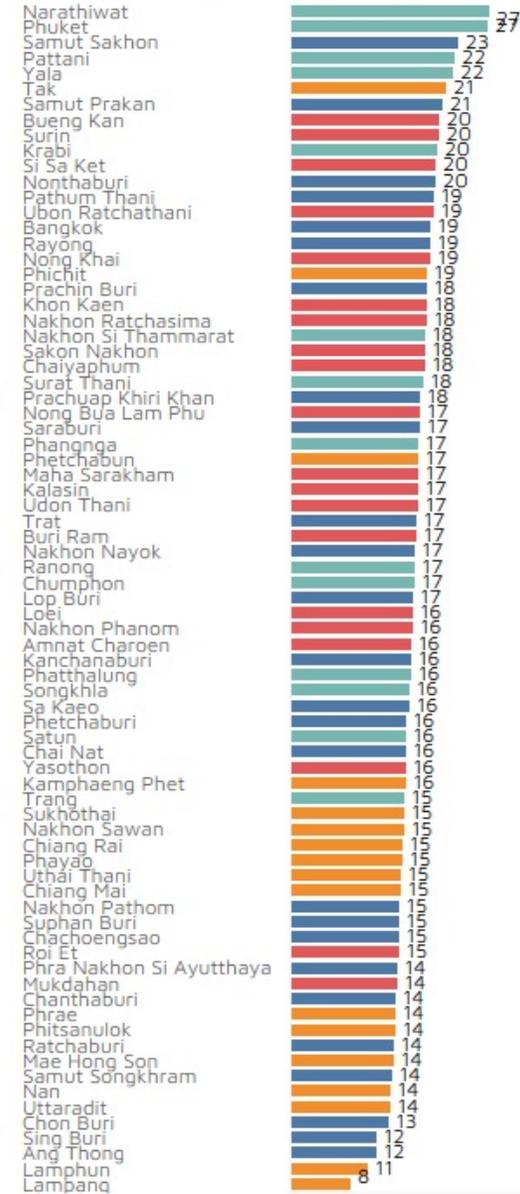
Average users per computer



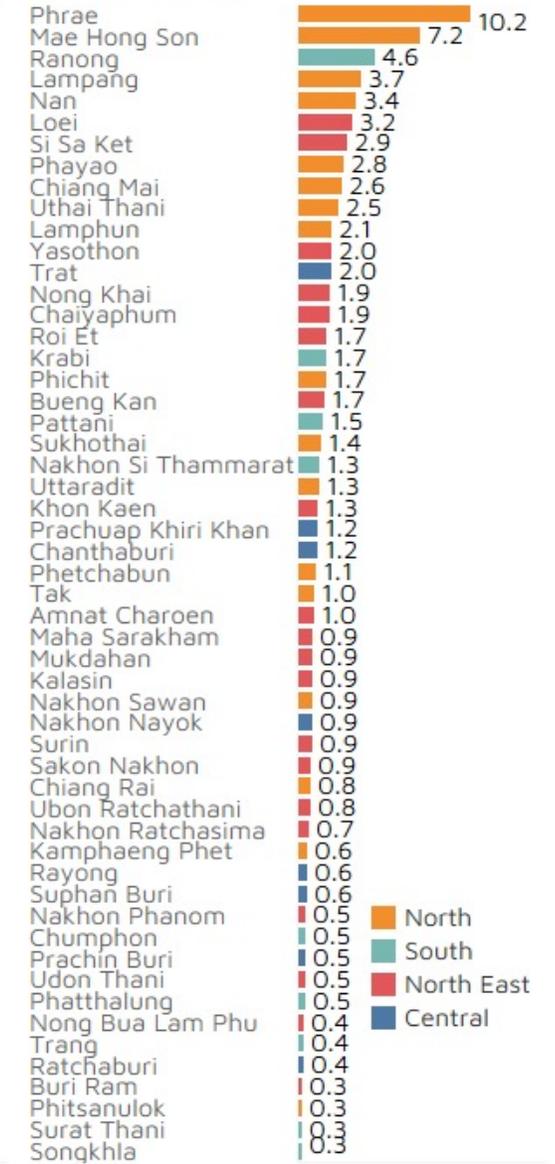
Average number of users per computer by region



Users per computer by province

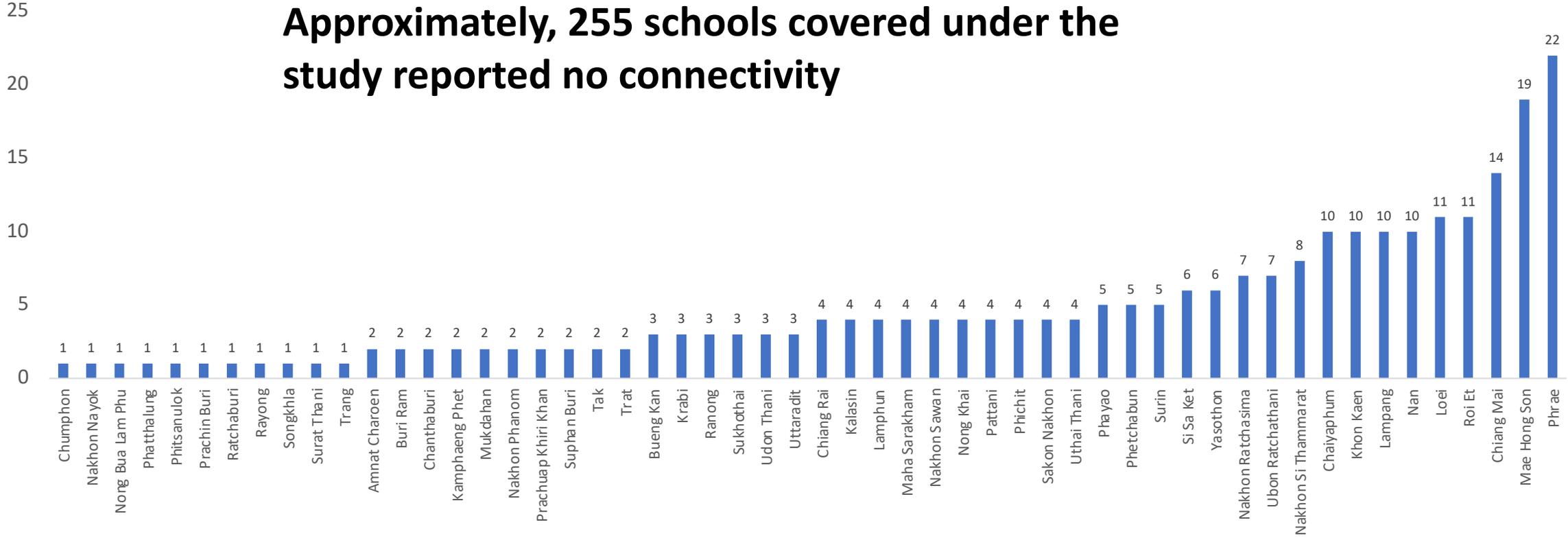


Percentage of schools without internet access by province



Although small in numbers, there are still schools without internet

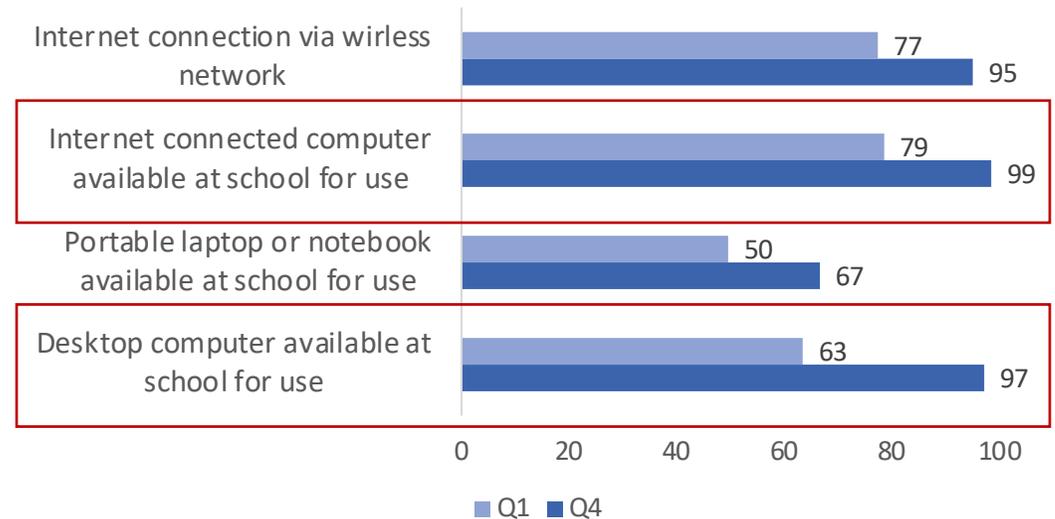
Approximately, 255 schools covered under the study reported no connectivity



Differences in access to digital device in school appears across socioeconomic status of students

- 19% students reported not having a desktop computer,
- 40% reported not having a portable notebook available for usage at the school level.
- Students from top socioeconomic quartile had better access to a desktop computer and internet-connected computer than the bottom quartile students.

State of access to digital devices and internet at school



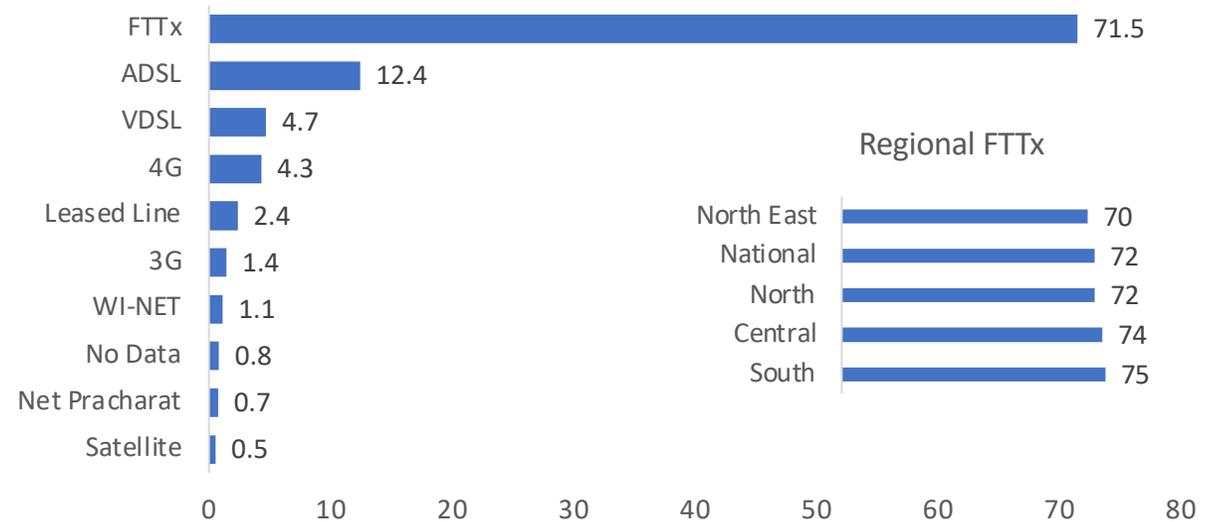
Source: (OECD, 2018)

A student's ESCS is derived from three variables related to family background: parents' education, parents' occupation and the index of home possessions are weighted equally. Students are considered socioeconomically disadvantaged if they belong to the bottom quartile of the ESCS index in their country, and socioeconomically advantaged if they fall within the top quartile.

7 of 10 schools in Thailand are connected with optical fiber

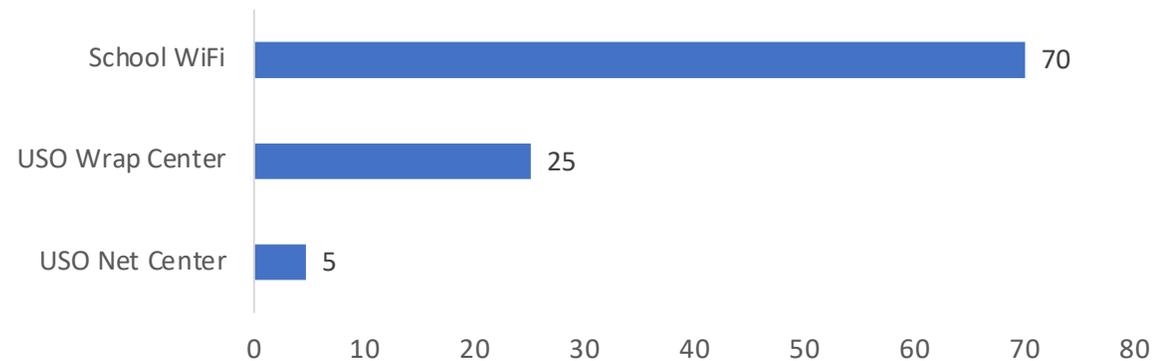
- Slight regional differences persist in schools' access to fiber connectivity.
- **North East region** is below the national average; Other regions better than the national average.
- **Northern** provinces schools used slightly higher percent 3G and 4G internet than other regions of the country.
- Schools are also connected to the internet through Net Pracharat
- Over 6000 schools provided WIFI (4380) and internet center (1623) at the school under USO by NBTC.

Internet connection of the schools by connection type (%)



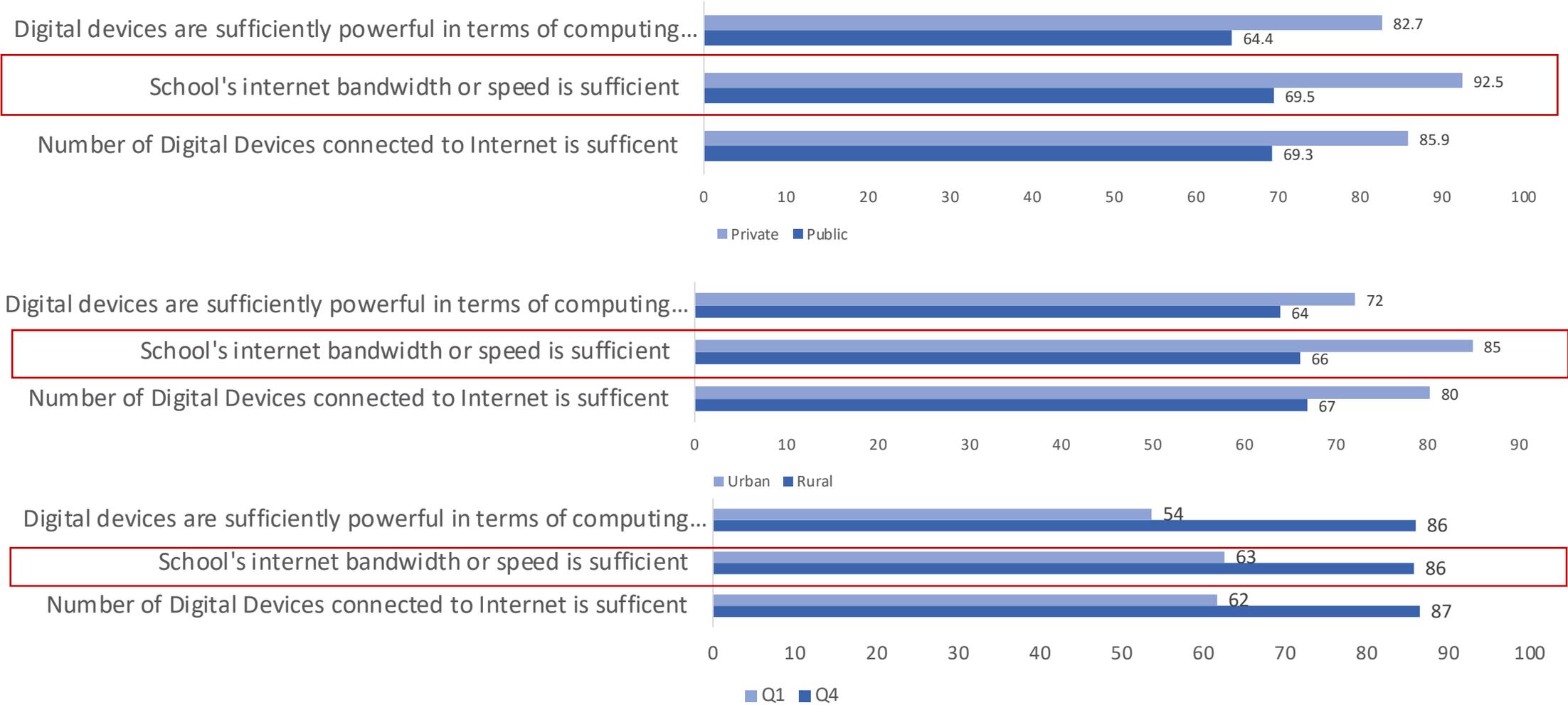
Source: Ministry of Education, 2020

Percentage of disadvantage schools covered under USO



Source: NBTC, 2020

School principals' opinion vary on the adequacy of internet and computing device



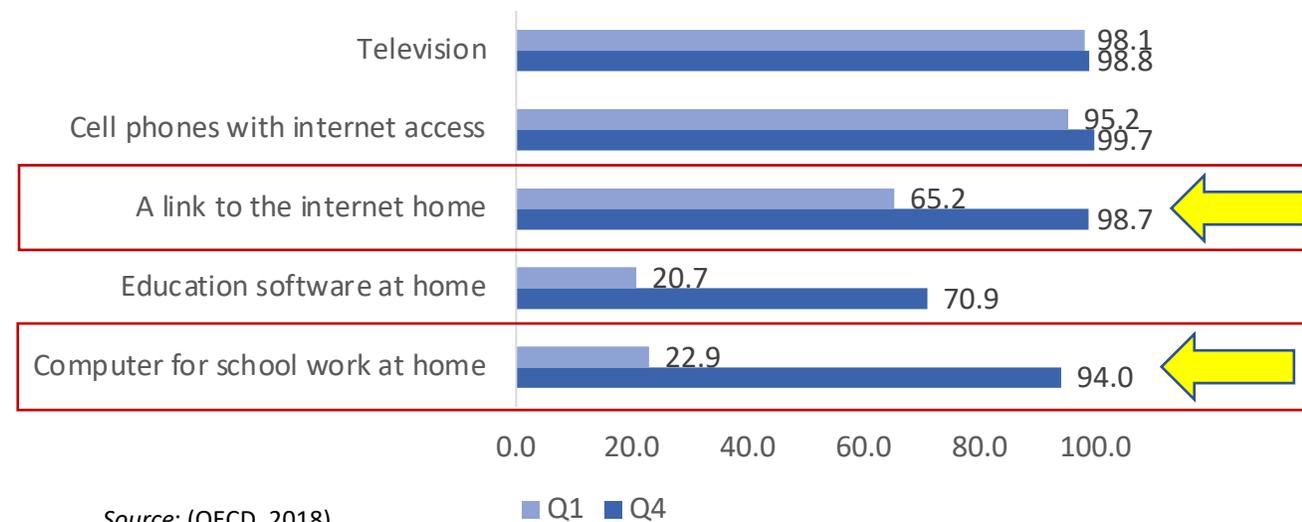
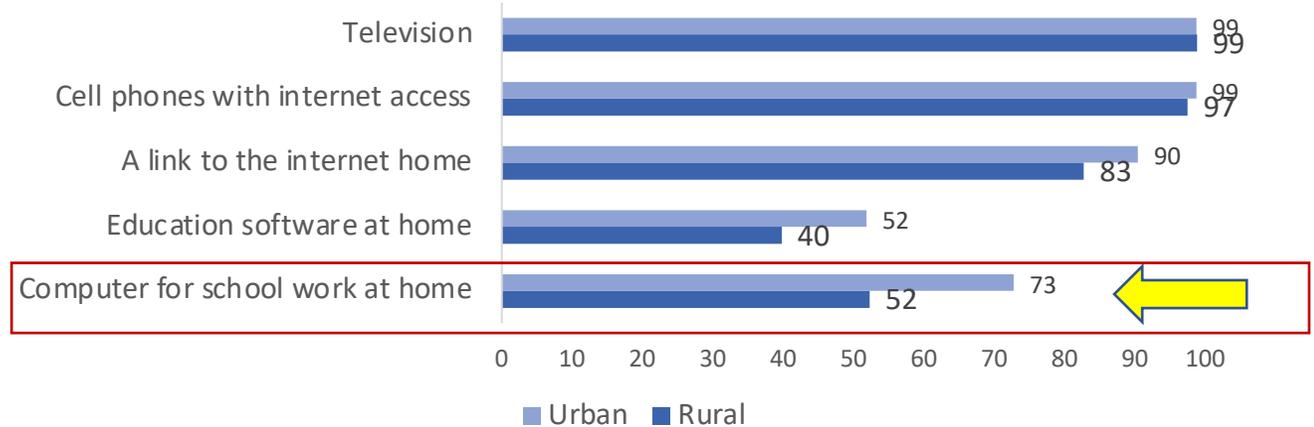
Source: (OECD, 2018)

Percent of school principals who agree or strongly agree on the adequacy of access to digital devices by school type, location, and socioeconomic status of students.

Divide across socioeconomic status and geography persists on access to computing device at home

- No major difference in access to TV in homes.
- Students from urban areas have 20% better access to computer for schoolwork at home than rural students.
- 2 out of 10 students from the bottom socioeconomic quartile have access to a computer for schoolwork at home as opposed to nine out of ten from the top quartile.
- 65% of disadvantaged students have access internet link at home compared to 99% among advantaged students.

Difference in access to digital devices and internet by school location and socio-economic status¹



Source: (OECD, 2018)

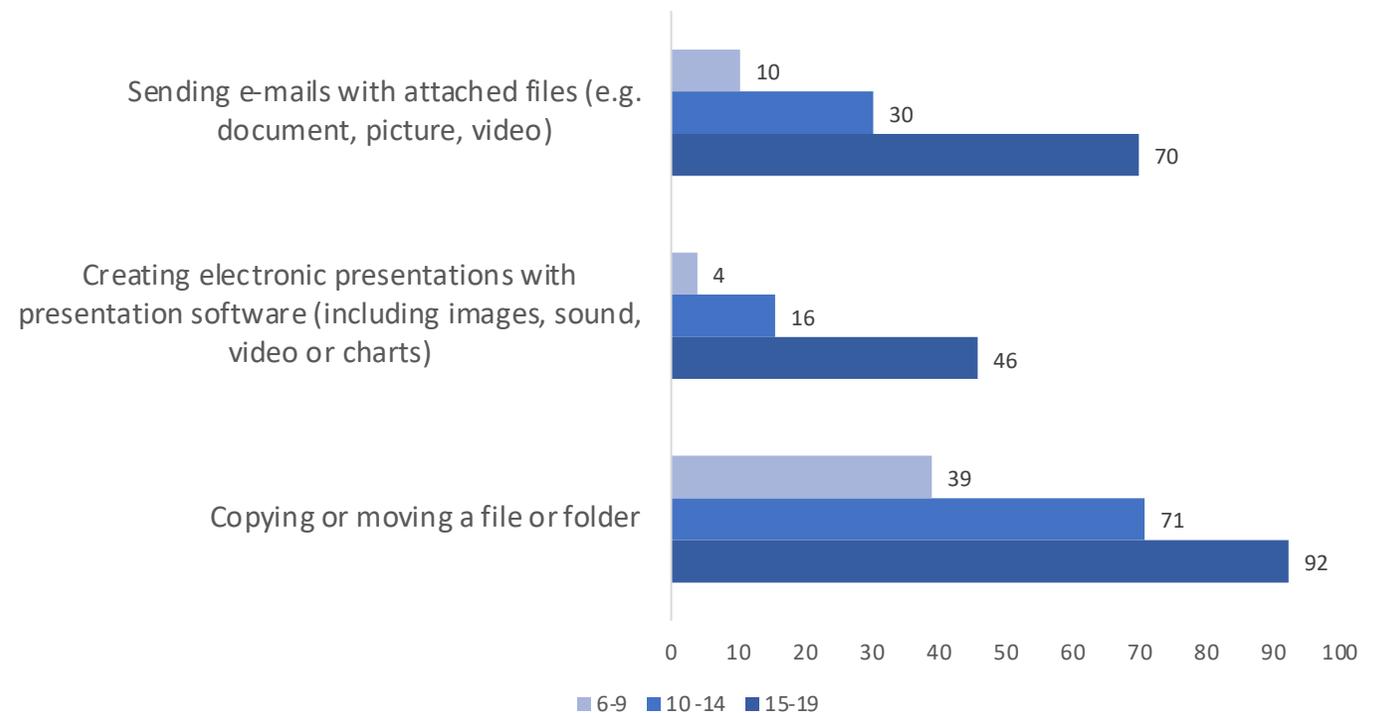
Usage of digital devices and connectivity



Older cohort users reported greater proficiency in the usage of computer and internet.

- Only **30%** of the computer users aged 10 – 14 (P5 – M3) reported having the skills to send emails with attached file compared to seventy percent among 15 -19 (M4 – UG2)
- Only **16%** of lower secondary aged students (10-14) reported using computers to create presentation compared to **46%** from upper secondary and early undergraduate aged (15 - 19) students.
- While there are differences in the usage among different age groups, **more than half** of the computer users did not use computer for educational activities like creating

Percentage of school aged population's computer skills



Typical age for P1 student is 6 years; M1 12; UG1 19 years.

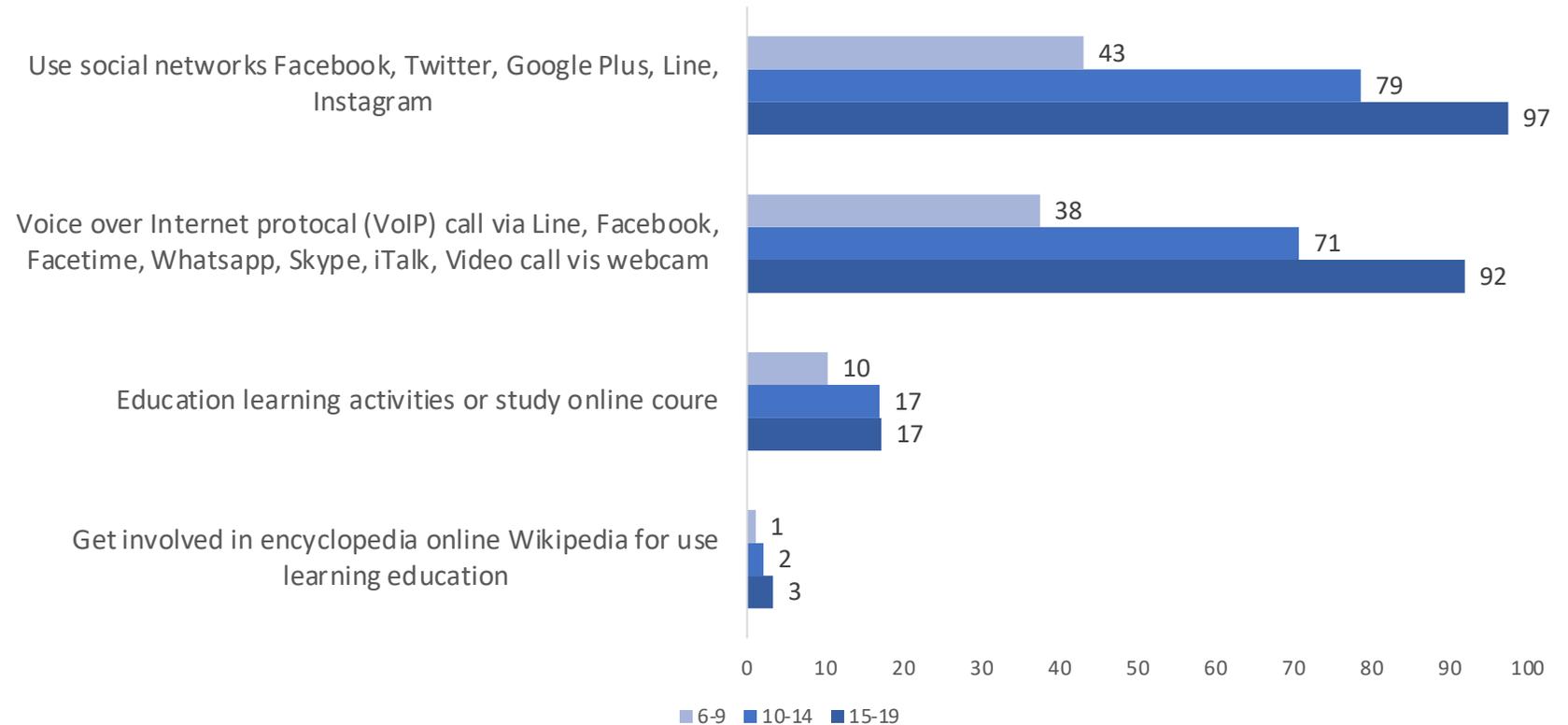
Source: National Statistical Office (2020a)

Usage of social media more than eLearning online

The usage of internet for learning activities or to study online course remain significantly lower.

Less than **20%** of the school aged internet users used the internet to pursue online course.

Usage of internet by school aged population



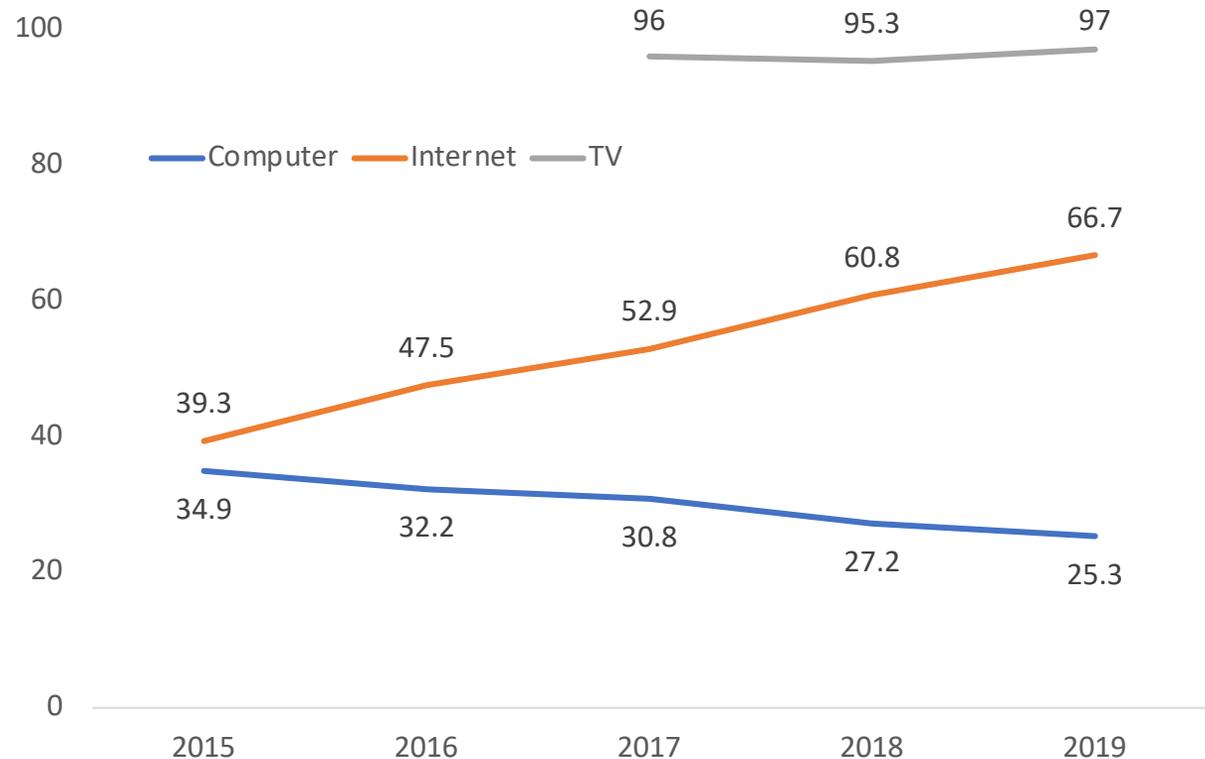
Typical age for P1 student is 6 years; M1 12; UG1 19 years.

National Statistical Office (2020a)

Internet using population has increased but computer users have declined

- Evidence suggests approximately **1 out of 4 Thai** residents above the age of 6 years use **computer**.
- **2 out of 3** Thai residents use internet and 3 out of 4 households have connection to the internet.
- **97 percentage** of the household have access to TV in their home.
- **Regional disparities persist in access.** Northeastern region of the country and southern region fall behind on access to **computer**.
- Similarly, Northeastern region and north are relatively behind in **internet access**.

Percentage of people aged 6 years and above using computers and the internet 2015-2019 and percentage of household with TV at home.

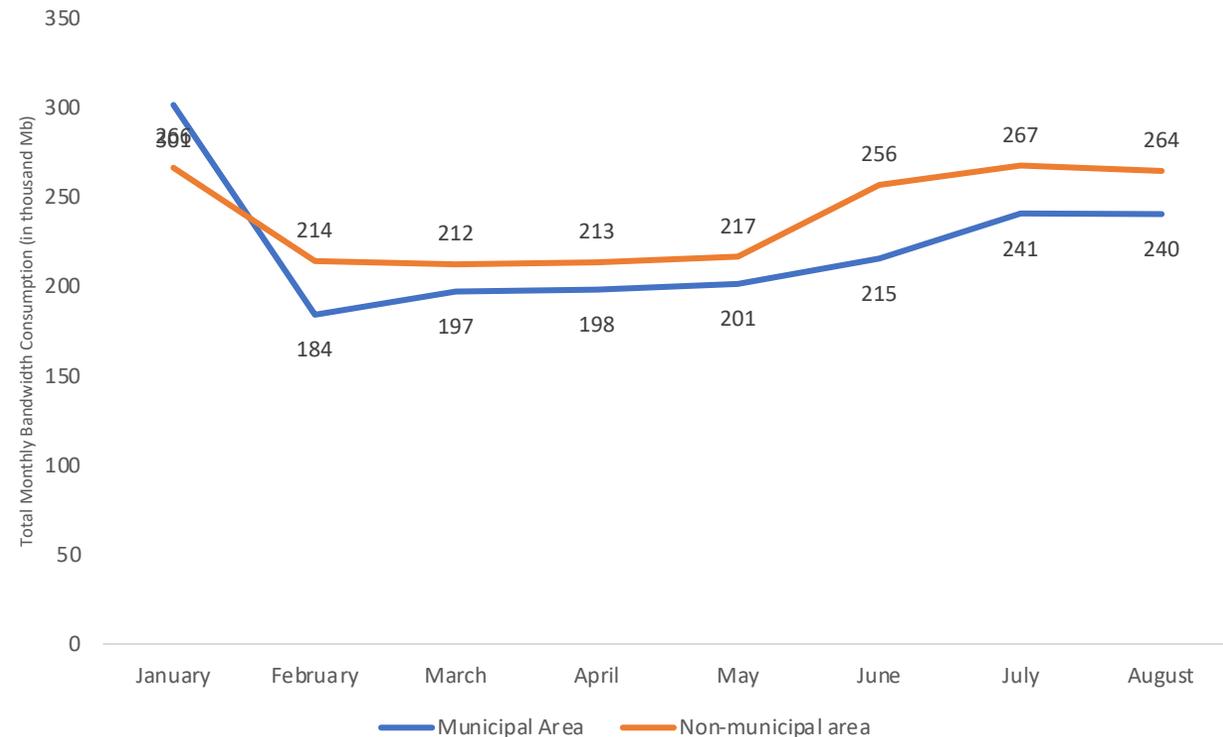


Rural connectivity (Net Pracharat) usage during COVID-19

While Thailand saw a surge in the domestic and international bandwidth of the internet during March to July of 2020, the usage of Net Pracharat network declined during the same time.

Facebook, Youtube, and google remained as the top three accessed websites on Net Pracharat network.

Total internet usage in different Net Pracharat locations between Jan – Aug. (2020)



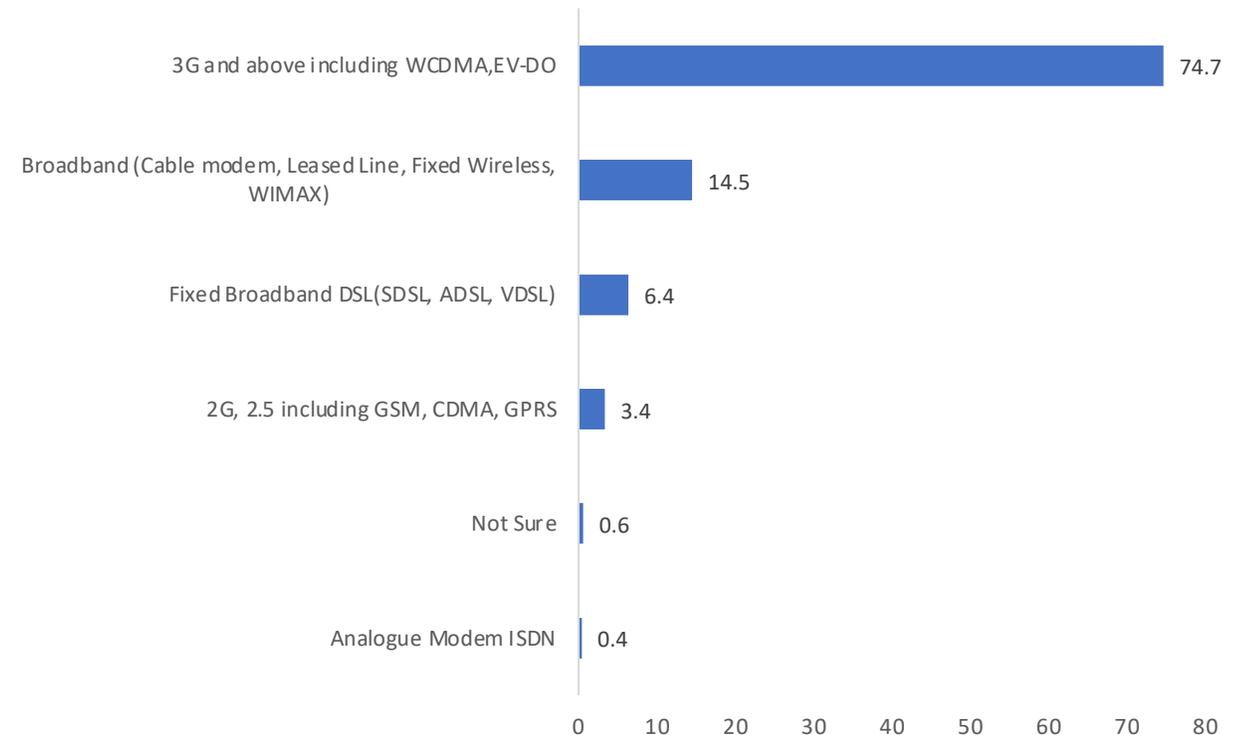
Source: Ministry of Digital Economy and Society, 2020

Affordability of the internet

- Relatively greater reliance on mobile broadband for eLearning poses significant financial challenges to students and their families.
- NSO data suggest more than 75 percent of the household are connected to the internet using a mobile network like 3G or above. A higher dependence on mobile broadband to access learning material would entail a greater cost.

For example, an average of 20 hours of live online group learning session per week over a prepaid mobile broadband package would cost a total of THB 4629 a month for one student.

Type of internet connection at the household



Source: National Statistics Office (2020a)

Recommendations



Improve the availability of data on status of school connectivity

- The availability of data specifically on students and school is limited. MoE collects data on digital devices and internet connectivity in the schools. However, not all the collected information is readily available for the analysis. It is important that datasets containing the school location, state of access to digital devices, and internet connectivity, including the internet's quality to help researchers and other agencies identify schools that need special attention are compiled at a centralized location.
- It is important to collect recent data on the usage of internet and digital devices and the teachers, students, and administrators' skills. Government should prioritize collecting data on how the devices and connectivity are used and what skills do students and teachers possess at the school level.

Enhancing connectivity information to include community

- Interoperability and visualization of data across different jurisdictions within various government departments (MoE, MDES, NBTC, Ministry of Interior, other agencies) that have schools under their jurisdiction should be enhanced.
- In digital environment, the learning environment expands from schools to community. It is important that assessment of connectivity is undertaken considering the experiences of the student in a more holistic manner. For the purpose, school-based data needs to be mapped with the existing telecom coverage connecting schools but also communities.

Increase availability of traffic information and bandwidth use from schools

- Important to increase availability of traffic information. For example, MDES, through its Net Pracharat project is able to collect data on the usage of the internet in the schools. However, at this moment, the project does not identify the schools clearly. As a result, crucial internet and network usage data are missed out. Hence, Net Pracharat and other project should identify and collect network usage data from all educational institutions that have access to its network.
- Net Pracharat location and usage data analysis reveals that students did not use the community-based network for learning purposes during the pandemic. Hence, the rural connectivity projects should expand their focus to incentivize household level connection wherever possible.

Set guidelines to ensure adequate internet and devices in schools

- Government should establish criteria to assess the bandwidth's adequacy in the schools by setting per capita student bandwidth targets and measuring progress.
- It is recommended to undertake pilot in a few schools of Thailand to understand and estimate the bandwidth and digital devices needs.

Improve digital device to student ratio in schools

- The relatively larger student to computer ratio in the school can pose a challenge in learning digital skills and other subjects that require the usage of devices in the schools. Hence, MoE should emphasize strengthening the students' access to computing devices that are instrumental for learning.

Improve affordability of internet connectivity for students

- Internet affordability, particularly mobile data, remains expensive for students, particularly for low socioeconomic status. Also, online learning would require much longer and stable internet access as compared to other applications. Commercial telecommunication providers and government agencies should consider means to subsidize the cost of internet for students from low-income families to provide equal learning opportunities.

Assess the impact of eLearning on education outcomes

Further studies should be undertaken to assess the impact of e-learning on education outcomes and see if the differential access to the Internet and devices indeed have impacts on students' educational achievements.

End of Presentation
