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Home schooling during the COVID-19 pandemic: An assessment of Malaysia's PdPR Program

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ADB Working Paper Series

**HOME SCHOOLING DURING
THE COVID-19 PANDEMIC:
AN ASSESSMENT OF
MALAYSIA'S PDPR PROGRAM**

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Abstract

Governments around the world have introduced a variety of programs aimed at facilitating distance learning in the home setting during school closures due to COVID-19. However, given the cross-country variations in state capacity, these programs differ significantly in terms of design, delivery, and coverage. Between-country variations in poverty and home conditions also create added challenges for home schooling programs. Therefore case studies examining country-specific programs are necessary. To this end, this paper examines the *Pengajaran dan Pembelajaran di Rumah* (PdPR) in Malaysia, an upper-middle-income country with high Internet coverage and a low level of extreme poverty. Data come from a purposefully designed nationwide social media survey on secondary school children conducted during January 2021. Under the PdPR scheme, the government created various technology-based platforms to ensure online learning. By way of studying children's participation in educational activities during school closures, this paper presents a descriptive assessment of the PdPR program. More specifically, we first develop a conceptual framework to summarize the PdPR initiative. Then we examine PdPR in three aspects: the regularity of online lessons offered by school authorities; the extent of the use of specific components and the medium of access of the PdPR scheme by learners; their subjective evaluation of, and difficulties faced with, online schooling. Data confirm a significant socioeconomic divide by income and location in access to EdTech as well as home support provisions. Most importantly, not only are online lessons irregular, but a significant proportion of students found online programs difficult to follow. Given the dissatisfaction, the majority prefer to return to on-site education once schools reopen.

Keywords: COVID-19, EdTech, learning crisis, home-based education, school closure

JEL Classification: D10, I21, J22, Q50

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1. INTRODUCTION

In the wake of the COVID-19 pandemic, there has been a global push for home-based teaching. In most instances, the distance learning strategy deployed in response to sudden school closures has been “emergency remote education” (Dreesen et al. 2020; Toquero 2021). At the same time, there is concern over a digital divide and learning loss (UNESCO, UNICEF, and World Bank 2020; Avanesian et al. 2021; Azevedo et al. 2021). Such losses are likely to be larger in countries and communities with poor social and physical infrastructure and/or prolonged school closures (Engzell, Frey, and Verhagen 2021). Malaysia too has suffered significant disruptions to schooling, and in this context, Malaysia is an important case study.

While many developing country governments have introduced popular media and Internet-based distance learning schemes, these are mostly on a piecemeal basis and lack coordination. On the other hand, soon after the closure of schools, the government launched the *PEMAKLUMAN PELAKSANAAN PENGAJARAN DAN PEMBELAJARAN DI RUMAH* (PdPR),¹ a comprehensive home-based learning program. In addition to launching a blueprint for implementing the PdPR, the government increased investment in education technology.² According to the recent global Survey on National Education Responses to COVID-19 School Closures, Malaysia ranks very high among upper-middle-income Asian countries in terms of access to digital technology at home (Internet and computer), including mobile phones and televisions (Asian Development Bank 2021). The country’s preexisting digital readiness could be a crucial advantage in averting a major learning crisis through the PdPR.

Despite the early intervention and a wide range of activities and services introduced under the PdPR scheme, there is growing concern about its effectiveness. No comprehensive assessment exists documenting student participation in, and experience of, the PdPR scheme. In general, very little exists on the learning experience of Malaysian students during school closures. On the other hand, popular media has regularly reported a variety of problems encountered by parents, students, and teachers. Effective implementation of home-based learning requires a supporting family environment and complementary educational infrastructure. However, beyond the issue of digital/technology access, not much attention has been given to the role of parents and families.

If the effectiveness of remote instruction is low, then according to one estimate, learning loss is likely to be the highest in Malaysia when compared to other Asian developing countries (ADB 2021). The risk of such loss is significant given pre-pandemic learning poverty: 13% of children in Malaysia are not proficient in reading (World Bank 2019). Malaysia also lags behind other High Performing Asian Economies (HPAEs) in international assessment of student achievements (Perera and Asadullah (2019). These concerns motivate us to critically examine Malaysia’s PdPR program.

The general research objective of the study is to offer an assessment of the PdPR scheme in the context of learning continuity during school closures. The three specific research questions are as follows. First, what is the learning landscape at home in terms of household provisions and preparedness to support PdPR? What were some of the main constraints? Second, what has been the actual experience of online

¹ <https://www.moe.gov.my/muat-turun/lain-lain/manual-pdp-di-rumah/3727-manual-pdpdr/file>

² Teks Ucapan: Pelan Jana Semula Ekonomi Negara (PENJANA) (11 August 2020). Retrieved 11 January 2021, from <https://www.pmo.gov.my/2020/06/teks-ucapan-pelan-jana-semula-ekonomi-negara-penjana/>

learning and participation in the PdPR? Third, how did learners evaluate the PdPR? What is the attitude towards school reopening? To answer these questions, we use nationwide data from a purposefully designed cross-sectional social media survey. The study sample has a good representation of children from different income groups and COVID-affected families. The focus is entirely on secondary school students from the majority Bumiputera ethnic group and the analytical approach is descriptive.

The rest of the paper is organized as follows. Section 2 explains the study context and conceptualizes the PdPR. Section 3 describes the data and sample composition. Section 4 presents the main findings. Section 5 discusses the results, highlighting their policy significance, while Section 6 is the conclusion.

2. COUNTRY CONTEXT – MCO, SCHOOL CLOSURE, AND THE PdPR

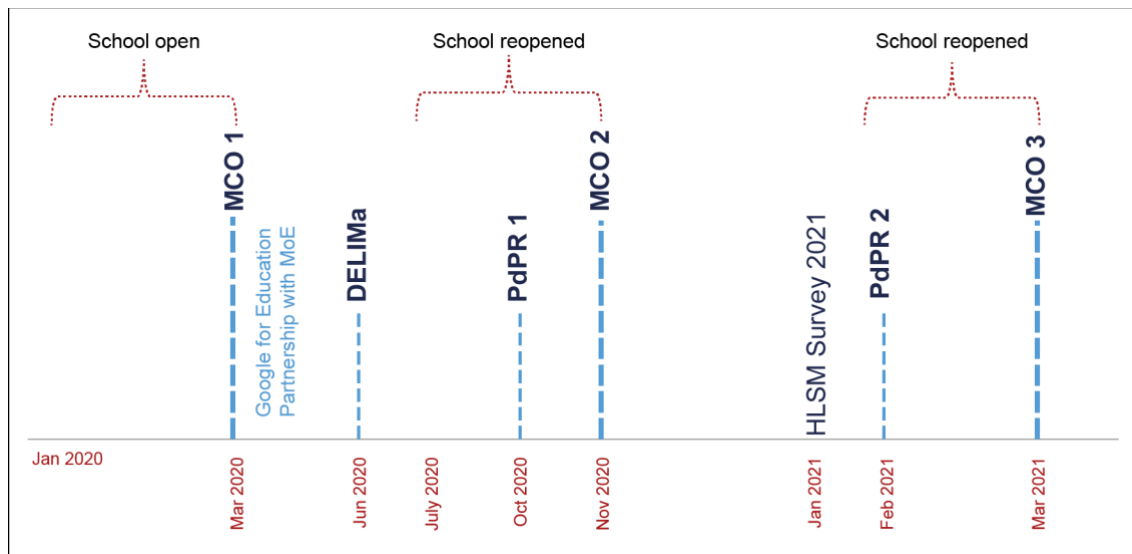
Like other countries, schools in Malaysia were closed on 18 March 2020 following the first “movement order control” (henceforth MCO). This affected 4.9 million students. The first MCO period was 18 March 2020 – 15 July 2020, followed by MCO 2.0 (9 November 2020 – February 2021) and MCO 3.0 (3 May 2021 – September 2021). Overall, Malaysian schoolchildren attended in-person classes for only six months in 2020 due to COVID-19. Schools nationwide were allowed to reopen in stages, starting on 15 July 2020 with the first stage, beginning with Form One to Form Four and Standard Five to Standard Six students, before continuing with Standard One to Standard Four on 22 July 2020. Although the full reopening of schools nationwide started in mid-July, students that would be taking public examinations (SPM, STPM, STAM, and SVM) as well as equivalent international school examinations were allowed to return to school and started their physical classes on 24 June. As Malaysia went through the third wave and with cases spiking, the MoE once again announced the closure of schools nationwide starting on 9 November 2020 until 19 January 2021 before reopening on 20 January in phases.

In order to ensure learning continuity during school closures, the government introduced home-based online learning on 18 March 2020, immediately after MCO 1.0 (Karim 2020). For this, the Ministry of Education partnered with Google for Education, along with other educational organizations, to conduct online webinars to upskill teachers in online learning to implement home-based learning, also popularly known as the “PdPR.” More specifically, the MoE launched a Distance Learning (MoE-DL) platform that provides links to Google Classroom, Microsoft Teams, Digital Textbook, Edpuzzle (interactive teaching via video), Quizizz (game quiz), and Kahoot (game-based learning platform). ODL Video links (i.e., EduwebTV and CikgooTube) can be accessed by all teachers, parents, and students nationwide. In June 2020, the Ministry of Education formally branded its Google Classroom online learning platform as DELIMa (Digital Educational Learning Initiative Malaysia) by partnering with Microsoft, Google, and Apple.³ The MoE also collaborated with the Ministry of Communications and Multimedia to air daily lessons on RTM’s TV Okey channel. This was partly to reach out to learners who were unable to access the MoE’s online education service, EduwebTV (Banoo 2020). In October 2020, the government launched a formal guideline for the PdPR with the objective of helping teachers implement the PdPR.

³ DELIMa was originally launched in July 2019 as a new digital learning platform to enhance digital learning in schools. However, this was further rebranded during the pandemic to ensure continuous access to learning. According to the 12 Malaysia Plan document, 98% of teachers were using DELIMa by the end of 2020.

This was further updated in February 2021.⁴ Figure 1 summarizes the overall policy timeline. Since data used in this study research were collected in January 2021, the study essentially examines the first year of home-based learning.

Figure 1: MCO, PdPR, and Policy Timeline



Source: Author.

How should we conceptualize the PdPR? In order to answer this question, a detailed description of the PdPR is necessary. A number of factors are worth highlighting. First, the PdPR manual is a guideline for parents and teachers as well as a reference for MoE administrators such as district education office (PPD) officers, departments of state education (JPN), and divisions in the Ministry of Education Malaysia (KPM). Second, the PdPR can be implemented online or offline or off-site.⁵ Teachers can implement the PdPR with the use of one of these methods or a combination of methods accordingly. Logistically the PdPR works through a combination of three things: (1) ODL (open and distance learning) online video links; (2) various educational TV channels; and (3) the DELIMa platform for schools offering daily online lessons. The DELIMa platform gives schoolteachers the digital tools to deliver daily online lessons. A teacher, however, may organize lessons using ODL (open and distance learning) online video links and home assignments delivered offline. Third, where Internet is weak or unavailable, TVs serve as an alternative. Students can use these to learn at their own pace, with or without attending daily online school lessons. Students could also learn via television through educational TV programs that are aired from Monday to Friday via TV Okey, Radio Televisyen Malaysia Channel 110, MyFreeview TV (RTM), Channel 146 Astro, Astro NJOI, Tutor TV, Astro GO, and DIDIKTV@NTV7.

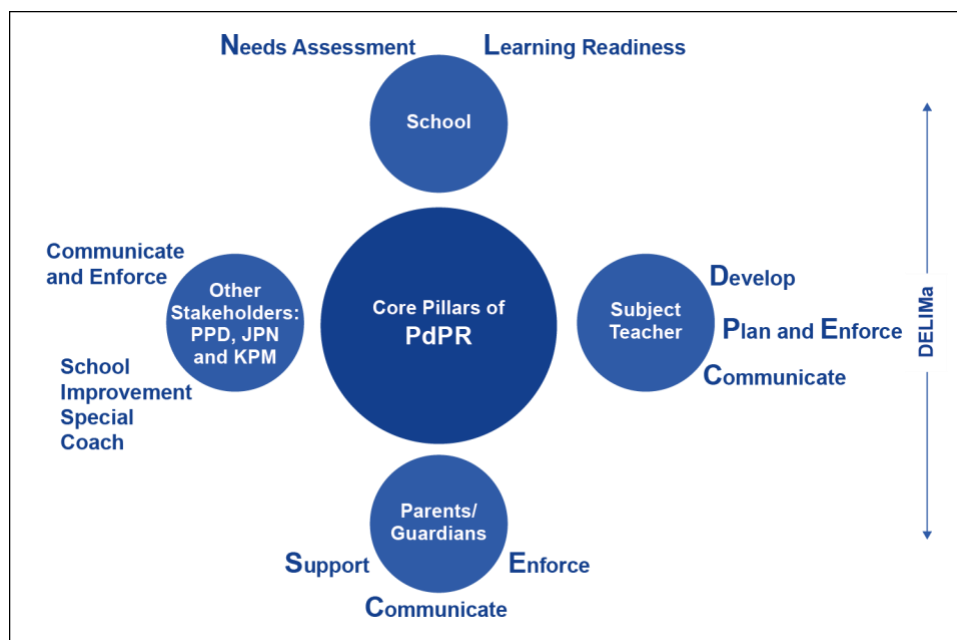
Fourth, it is expected that regardless of the medium of instruction, responsible schoolteachers will remain in regular contact with students to implement home-based learning. In sum, teachers can implement the PdPR via (i) learning platforms such as DELIMa, Cikgootube, EduWebTV, and social media applications, or (ii) applications such as Google Meet or Microsoft Teams live streaming, or (iii) eGames, video, audio clips, eBooks, recordings, or online assignments.

⁴ <https://www.pendidik2u.my/pengajaran-dan-pembelajaran-di-rumah-pdpr-2-0/>.

⁵ <https://www.moe.gov.my/muat-turun/lain-lain/manual-pdp-di-rumah/3727-manual-pdpr/file>.

Fifth, in addition to the manual (see Appendix A for further details), the MoE regularly communicated with all responsible education bodies through its professional circular letter and notification letter. According to the PdPR guidelines, school authorities are expected to ensure that all students can follow the PdPR based on their needs and readiness. Equally, teachers are required to identify appropriate PdPR methods (e.g., modules vs project-based learning) so that students can master the content of the prescribed subjects. Teachers are also encouraged to explore different and appropriate ways to enhance learning continuity and increase student involvement.

Figure 2: Conceptualizing the PdPR



Source: Author.

If the PdPR scheme is implemented successfully and in full, it can in theory avert major learning loss by ensuring learning continuity during school closures. In practice, despite the government guidelines, there are important variations in the way schools across the nation have ensured home-based learning. For successful implementation purposes, the PdPR depends on effective coordination and communication involving multiple agents: principals, parents, subject teachers, and MoE officials. And the nature of coordination varies depending on whether the PdPR can be implemented online or offline or off-site. At the same time, regardless of PdPR governance, home conditions are not only unequal, but there’s also a significant divide in parental capability to support and enforce a home-learning regime. And one can add to these demand- and supply-side educational challenges the extra burden of economic and psychosocial distress caused by the pandemic.

Examples of specific parental capabilities include EdTech-related literacy among parents, e.g., familiarity with Google account registration or the ability to search for subjects in Google Classroom, browse subject materials on the DELIMa platform and YouTube, and handle Google Meet sessions for their children’s online classes. Equally, the monitoring role of parents includes regularly verifying whether children attend online lessons and what they learn during PdPR lessons. In other words, the PdPR requires proactive and digitally able parents and a congenial and supportive home environment. The success of the PdPR also depends on at least four sets of factors:

(i) effective leadership, preparation, and implementation at the school level; (ii) regular online attendance of responsible/class teacher as well as their digital literacy; (iii) governance and monitoring of schools by local-level education authorities; (iv) physical provisions at home (e.g., access to books, the digital divide, and the Internet) and the capability of parents (e.g., digital literacy). Figure 3 summarizes this in a conceptual diagram.

While there is no peer-reviewed publication on the PdPR, we are aware of at least three related reports. A joint study by UNICEF and UNFPA on 500 low-income urban families in Klang Valley found that 76% of children preferred to attend school physically instead of online learning (UNICEF and UNFPA 2020). The most commonly cited reason (47%) for not preferring online education was having no place to study. A poor Internet connection was also cited as a key challenge for online learning. Among other findings, 28% did not possess, or have any access to, devices (computer/tablet/Laptop); the majority (87%) of children used a cellphone for online schooling during MCO.

Similar results were obtained by a nationwide survey conducted in May 2020 by Teach for Malaysia covering 743 students. The majority of students surveyed (75%) preferred on-site school attendance (Tan 2020). However, the survey also provided additional important insights. About 40% of students have had negative feelings about their online learning experiences. Among other notable findings, students attribute part of their online learning-related grievances to conflicting class schedules and unclear class organization systems. Compared to younger students (13–16 years), older students (17–18 years) reported being more tired, frustrated, anxious, and feeling lost towards online learning.

Given the limited evidence, there has been intense debate on the effectiveness of the PdPR in the popular media. Apart from the question of the unsatisfactory “quality” of online education, there have been complaints about absentee or lazy teachers.⁶ During a parliament session in July 2020, the then Education Minister Radzi Jidin acknowledged the diverse socioeconomic background of learners across the country and how that may have undermined the efficacy of online learning.⁷ The Minister also quoted an unpublished survey by the Ministry of Education conducted in April 2020 on over 670,00 parents and 893,00 learners. The government survey found that (i) 36.9% of students did not possess or have any access to devices; (ii) only 6% of students had personal computers, with 5.76% having tablets, 9% having laptops, and 46% having smartphones.

In sum, all of the available evidence reviewed in this section dates back to the early months of school closures. While the early evidence did raise questions about the effectiveness of the PdPR, we do not have systematic evidence based on data after the PdPR was fully implemented. Moreover, the PdPR manual is just a guideline for parents, teachers, and responsible MoE officials. The actual student experience with online schooling under the PdPR scheme depends on what the teacher decides about the best methods for their students, bearing in mind students’ background and circumstances, and how they are governed by school principals and MoE administrators. Teachers will differ in terms of methods used to deliver the lessons depending on personal and location-specific circumstances. This is yet another reason to document the heterogeneity in students’ online learning experience during school

⁶ <https://www.malaymail.com/news/malaysia/2021/06/06/students-cant-return-to-school-next-week-to-still-undergo-pdpr-for-25-days/1979970>.

⁷ <https://www.malaymail.com/news/malaysia/2020/07/16/education-ministry-over-one-in-three-students-couldnt-access-online-learnin/1885005>.

closures and in that context examine which is the biggest challenge: implementation-related issues or challenging circumstances at home.

3. DATA AND SAMPLE

Our data come from a purposefully designed week-long social media-based cross-sectional survey completed during January 2021. In total, a little over 7,000 secondary school students (7,111 including non-Bumi) were reached out to via Instagram. The final working sample comprised 6,823 students, all of whom belong to the majority ethnic group (Bumiputera Malay). Children of Chinese and Indian ethnicity were not included. Students from all secondary grades were allowed to participate. In the final sample, 42% were from Form 5, 25% from Form 4, 20% from Form 3, and 13% from Forms 1 and 2).

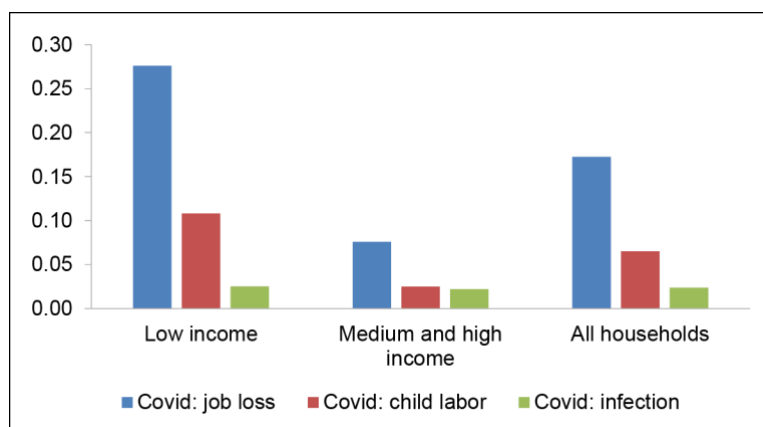
Using social media as a data collection platform for a nationwide online survey for COVID research is not uncommon in the literature.⁸ Nonetheless, the nonrepresentative nature of the data raises valid concerns relating to systematic bias in terms of underrepresentation of certain demographic groups. To assess this, we looked at the sample composition in detail. While our data are not nationally representative (3% of respondents are from East Malaysia (Sabah/Sarawak)), the sample is nationally spread out and has good coverage of students from various states of Peninsular Malaysia (Johor 9%, Kedah 7%, Kelantan 10%, Melacca 4%, Negri Sembilan 4%, Pahang 4.7%, Penang 3.4%, Perak 8.6%, Terengannu 5.7%, Kuala Lumpur 6.2%, and Selangor 31%). Appendix Figure 1 plots state-wise response data against the population share of each state.

Apart from the spatial distribution, the sample also overrepresents female students. Otherwise, it has a broad representation of different income and social groups, particularly students from different income groups: Almost half (48% of the study children) belong to the bottom 40% income groups (i.e., households with a monthly household income below RM4,000). Among other notable characteristics, a significant proportion of the sample belongs to COVID-affected households. Figure 3 reports data on sample composition by COVID-19-related disruptions. Although 2% of respondents reported having an infected member at home at the time of the survey, 17% of the sample children reported a fall in their family income while 6% reported an increase in child labor during lockdown. Among children from poor households (monthly income of less than RM2000), 35% reported an income loss while 12% reported increased involvement of children for paid work⁹ (Figure 3).

In sum, HLSMS 2021 overrepresents educationally better-provided-for locations (i.e., Selangor and West Malaysia) and female students. Moreover, we can't distinguish between rural and urban kids. Among other limitations, teachers and parents were not interviewed directly. Children active on social media may share unobserved traits. Lastly, we didn't collect data on student/teacher absenteeism. In other words, HLSMS data are subject to some limitations. But we argue that for these reasons, the data should give us at least a conservative assessment of home learning compared to what we would learn from a more representative survey that has better coverage of poorer locations and a student population without Internet access (social media).

⁸ For other COVID-19-related research following similar survey approaches, see Ali et al. (2020).

⁹ The corresponding figures were only 5% and 1.6% in households with a monthly income above RM8,000.

Figure 3: COVID-19 Exposure and Related Shocks

Notes: (1) “Job loss” is based on responses to the following question: “Last year (2020), did any of your parents lose their job or stop working for more than one month?” (2) “Child labor” is based on responses to the following question: “Did you have to work to support your family last year?” (3) “Covid infection” is defined based on the following question: “Did anyone from your family (parents/brother/sister/you) get infected by COVID-19 last year?” (4) Income group differences in “job loss” and “child labor” are statistically significant at the 1% level.

We have organized the findings into three subsections; to assess disadvantages associated with monetary poverty, we have divided the data by family income. The next section discusses these in detail.

4. MAIN RESULTS

4.1 Socioeconomic Divide in Home Environment

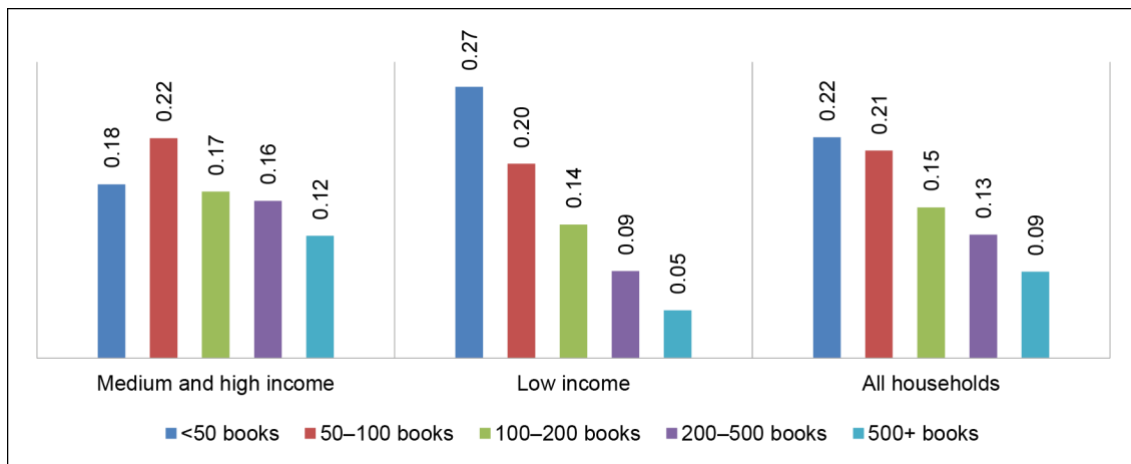
A widely used proxy for learning environment at home in terms of physical inputs is the number of books (Schütz, Ursprung, and Wößmann 2008; Sieben and Lechner 2019). Figure 4 presents data on access to learning materials in terms of the availability of books. On average, 57% of children reported having more than 100 books at home.¹⁰ However, there is significant difference across socioeconomic groups. Low-income family students have significantly fewer books at home: 5% of students from low-income families report having more than 500 books at home (12% for middle/high-income families). Similar differences are also evident in the distribution of EdTech infrastructure at home.

Figure 5 plots data on six specific EdTech provisions: availability of a mobile phone, computer, laptop, tablet, and a TV. In addition, we report whether the learner has at least one of the following: a computer, iPad, or laptop. Some 55% report having a good Internet connection at home.¹¹ Mobile ownership is near universal (99%). Laptops (83%) are more common than (desktop) computers (29%) and iPads (30%). TV ownership is also high (84%). When computers, laptops, and iPads are considered together, 89% of respondents report at least one of these devices.

¹⁰ Compared to other Asian countries, an average 15-year-old Malaysian student has more books at home than those in Viet Nam but fewer than students from the Republic of Korea and Singapore. In PISA 2012 data, 25.4% of Malaysian students reported having more than 100 books at home (Asadullah, Perera, and Xiao, . 2020).

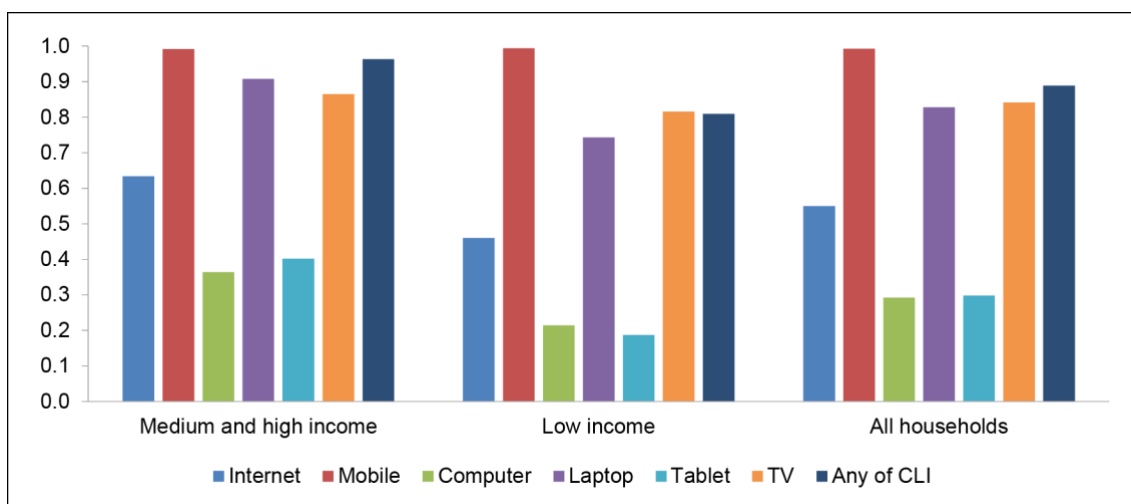
¹¹ We only have a subjective measure of goodness of Internet access; HLSMS 2021 has no technical details on the quality of Internet connection.

Figure 4: Number of Books at Home



Notes: (1) The total book count excludes e-books. (2) All differences by income group are statistically significant at the 1% level.

Figure 5: EdTech and Digital Device Access at Home



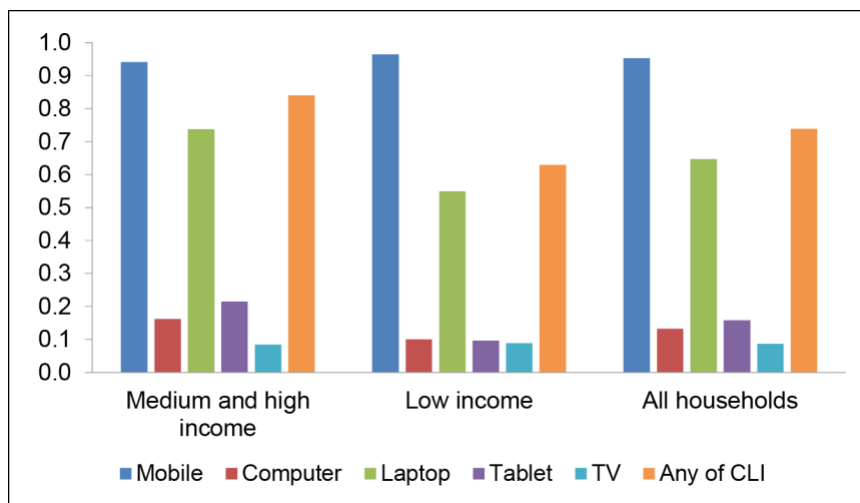
Notes: (1) The outcome variable is based on responses to the following question: “Which of the following facilities/devices do you have at home? (Tick all that apply)” (2) The Internet variable is based on responses to the following question: “Do you have a good Internet connection at home?” (3) All differences in technology access by income group are statistically significant at the 1% level (except mobile phone availability).

A digital divide in terms of EdTech ownership is evident when we look at the distribution by income groups. Sample students belonging to low-income families have less access to the Internet as well as having at least one computing device (computer/laptop/iPad). Only 46% from low-income families report a good Internet connection at home compared to 63% from the middle/high-income category. However, 81% from low-income families report having at least one computing device (computer/laptop/iPad) at home compared to 96% from the middle/high-income category. In other words, the gap between rich and poor is less striking when we use a broader definition of access.

Yet when it comes to the use of technology for educational purposes, regardless of income, cellphones are the most popular choice (Figure 6). The use of any computing device (CLI) is as low as 63% in the low-income category but as high as 84%. This implies that learners may be competing with others in the household for the use

of digital gadgets. Indeed 25% of learners, regardless of income, identify this as a challenge. Moreover, regardless of income, a cellphone is the most popular choice as a technology for educational purposes. Another notable finding is that compared to other developing countries (e.g., India), TVs are well utilized as a learning modality.¹²

Figure 6: EdTech Use at Home



Notes: (1) Outcome variable is based on responses to the following question: “Which devices did you use during online learning last year? (Tick all that apply)” Since there are multiple responses, the sum does not add up to 100. (2) All differences in EdTech use at home by income group are statistically significant at the 1% level.

In addition to resources at home, students reported receiving limited family support (Figure 7). As many as 86% reported having to “study alone,” at least for some time. Among family members who assisted, mother is named most frequently (29%), followed by siblings (28%), father (21%), relatives (18%), and “both parents” (15%). Again, there is an income divide: 35% of middle/high-income students reported a supporting mother versus only 23% of low-income learners. Similarly, 23% of middle/high-income learners reported receiving support from both parents compared to only 13% in the case of low-income learners. Students who received support from parents (mother, father, or both) were significantly less likely to report studying alone (Appendix Table A).

Lastly, access and opportunities to use EdTech aside, learners faced a host of challenges at home during MCO (Figure 8) – 70% reported unstable Internet as the main challenge, followed by family disturbance (62%), increased household chores (56%), having to share a digital device, and no Internet connection (21%). Unstable Internet is a serious challenge for low-income learners. By income group, a significant difference is also noted in the case of a lack of Internet access (28% among low-income students vs 16% among middle/high-income students). However, the second most commonly cited challenge is increased household chores (74% among low-income students vs 66% among high-income students).

¹² For evidence on India, see Cappelle et al. (2021).

Figure 7: Family Support for Home-based Learning

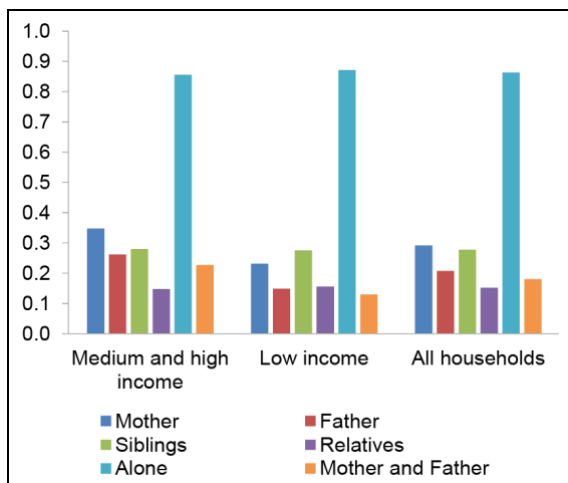
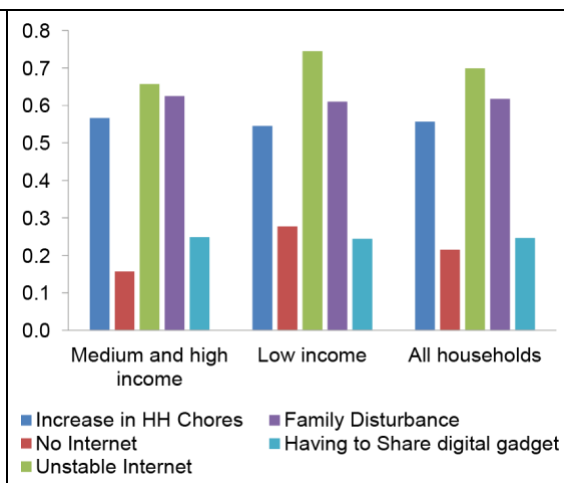


Figure 8: Challenges of Home-based Learning



Notes: (1) Figure 7 is based on responses to the following question? “Apart from teacher/tutor, which family member regularly helped you with your study during the MCO?” (multiple answers allowed). The answer option “alone” indicates whether the student reports having to study alone at least on some occasions (as opposed to always receiving assistance from a family member). (2) Figure 8 is based on responses to the following question: “What are the challenges you faced with online schooling?” (multiple answers allowed)” (3) All differences in different types of “Family support for home-based learning” by income group are statistically significant at the 1% level (except support from relatives and siblings). (4) All differences in different types of “challenges for home-based learning” by income group are statistically significant at the 10% level (except “family disturbance” and “having to share a digital gadget”).

In sum, similarly to the EdTech divide at home, a significant divide prevails in terms of actual access to EdTech infrastructure. In addition to access, there is also a family divide in terms of the support for home learning across income groups. In other words, there are unequal learning opportunities and support at home among Bumiputera students. When looking at the distribution of learning materials and education technology at home as well as family support, learning opportunities at home were highly unequal. These gaps correlate well with family income. Considering Malaysia’s high per capita income, these differences are significant.

4.2 Participation in and Subjective Assessment of the PdPR

We assessed participation in two ways – in terms of the use of various technologies used for the PdPR and by asking directly about the regularity of online lessons.¹³ Figure 9 reports the different types of technology used for online education. Most students reported using various technology platforms for online *learning* purposes to which all teachers have access through the MoE’s DELIMa (Digital Educational Learning Initiative Malaysia). More specifically, Google Class is the most common platform (89%), followed by Telegram (85%), Google Meet and WhatsApp (82%), Zoom (77%), and skype (3%).¹⁴ There is no systematic difference by income groups. Based on the extensive use of various technology-based learning tools that are part of DELIMa, all students apparently participated in online schooling under the PdPR.

¹³ “Irregularity” here refers to students missing classes because of schoolteachers not organizing online sessions. We did not collect data on student absenteeism.

¹⁴ The popularity of WhatsApp and Telegram is partly explained by the fact that they do not require high Internet speeds or large volumes of data. Therefore they are the most viable options for students and teachers for remote learning lessons with slow Internet connection.

However, in terms of the actual conduct of online sessions by school authorities/teachers, there are large variations. Only 52% of students reported that online classes were organized regularly by the school; 25% reported irregular lessons while the remaining 23% reported no online classes at all. Although students from economically better-off households have a slightly higher exposure to regular online classes (55% vs 49%), even among this group, 20% reported receiving no lessons at all; the remaining 24% reported irregular online sessions. Therefore, the low incidence of online lessons among low-income students does not suggest that the pattern is driven by students in income poverty who simply lack the digital infrastructure at home to regularly attend online lessons. Instead, it is possible that the irregularity is related to issues of poor governance and noncompliance by teachers and schools.

Figure 9: Types of Online Communication Tools Used

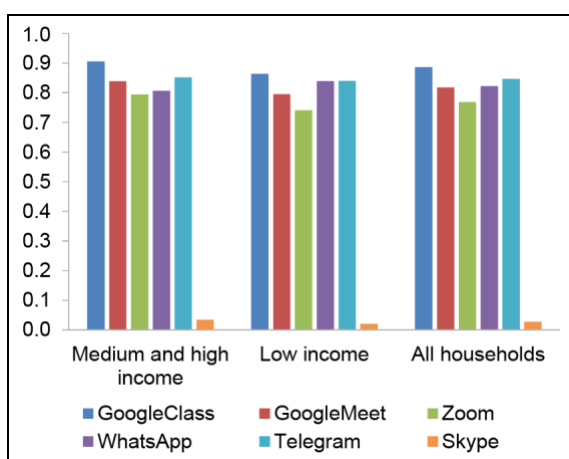
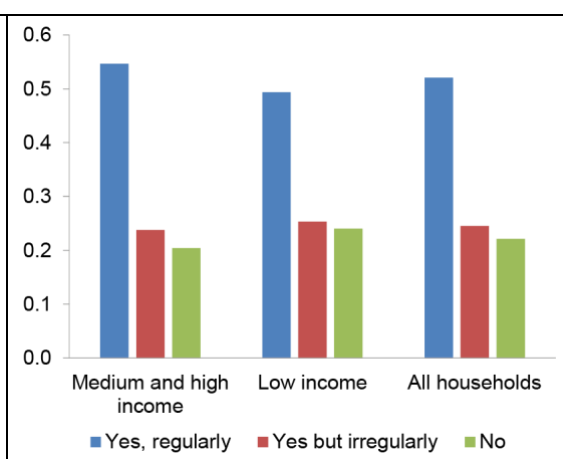


Figure 10: Regularity of Online Classes



Notes: (1) Regularity of online classes is based on response to the following question: “Last year, did your school offer daily online classes?” (2) All differences in different types of “online communication tools used” by income group are statistically significant at the 1% level (except “Telegram”). (3) All differences in different categories of “regularity of online classes” by income group are statistically significant at the 1% level (except the category “Yes but irregularly”).

Figure 11: Did Not Use PdPR Online/TV Programs

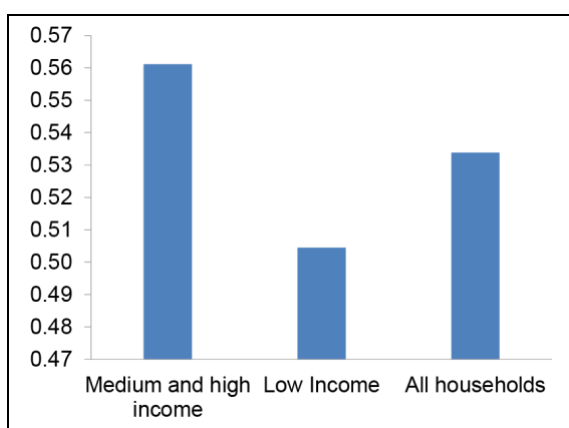
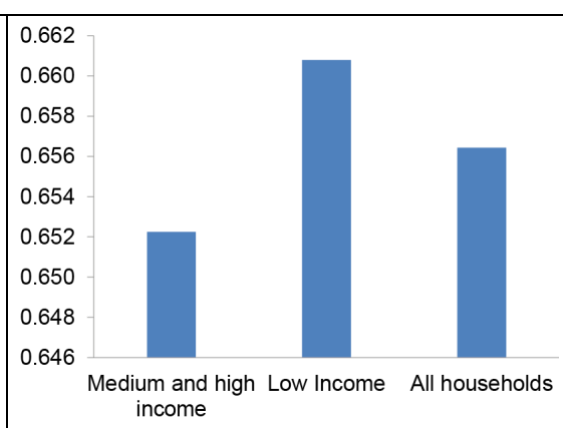


Figure 12: Quality of PdPR Programs

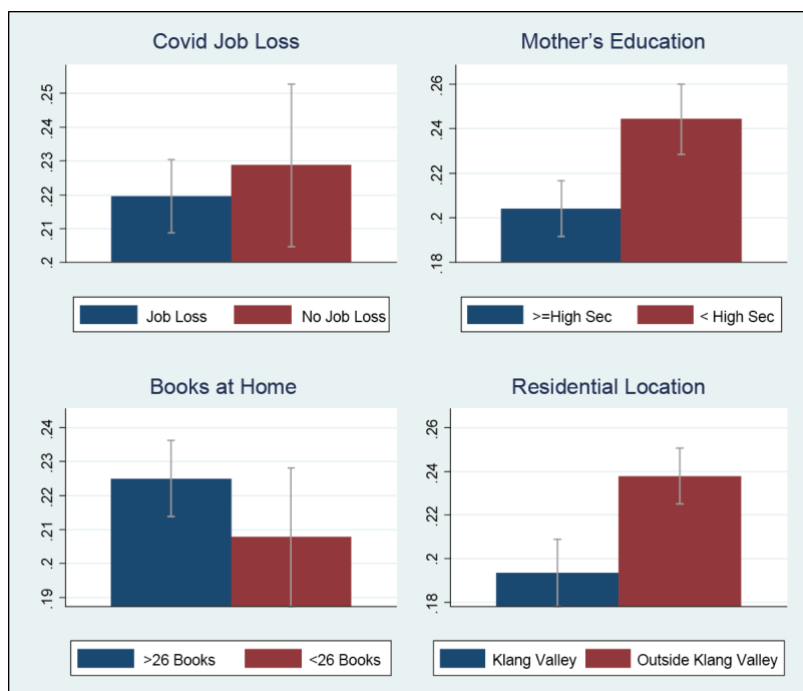


Note: (1) Figure 11 is based on responses to the following question: "Did you watch any government (distance) learning program?" (2) Figure 12 is based on responses to the following question: “Did you findthe programs easy to follow?” (3) Differences in the “use of PdPR online/TV programs” by income group are statistically significant at the 1% level.

Another possibility is that students may have watched PdPR programs on TV or online regardless of the school’s online lessons. However, half of the sample students did not watch any PdPR program regularly. Figure 11 reports the data. Among those who watched PdPR online programs, 34% didn’t find the quality satisfactory – they reported that the programs were not easy to follow.

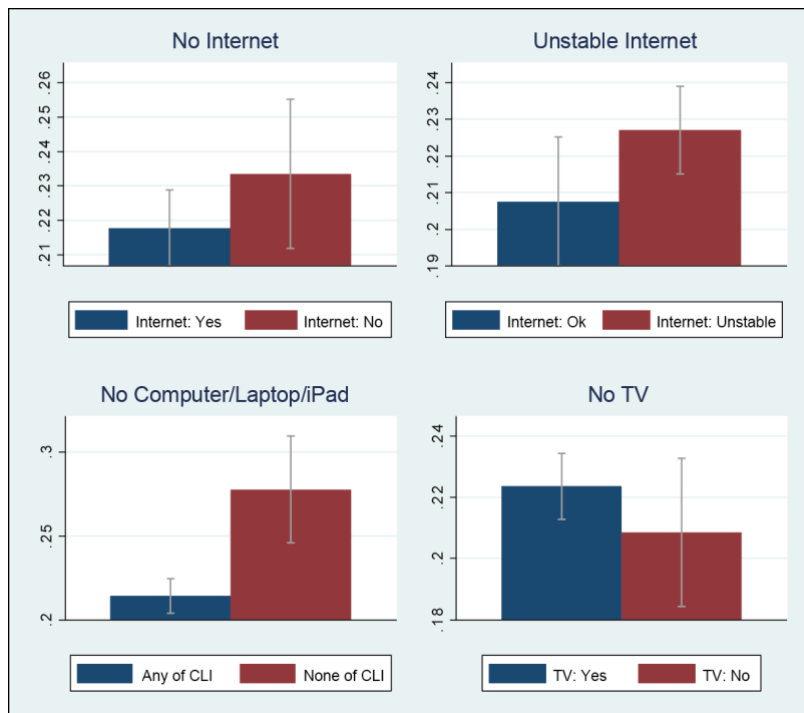
Based on the results presented so far in this section, two main findings can be highlighted: (i) a large proportion of students expressed dissatisfaction with the quality of lessons available online under the PdPR scheme (Figure 12); (b) almost half of the students (47%) reported not receiving regular online lessons and 22% did not receive any lessons at all (Figure 10). We have conjectured that the latter finding is likely to reflect a governance problem. But it could well reflect the design of the PdPR scheme in that teachers can implement home schooling offline or off-site (in the case of an Internet problem). To explore this further, Figure 13 plots data on “missing online schooling lessons” by selected SES indicators. A significantly higher proportion of students without any digital device (laptop, iPad, or computer) reporting missing classes suggests that teachers may well be offering lessons offline for these students. However, we also find no significant correlation between missing online lessons and unstable Internet or a lack of access to the Internet. Differences by COVID job loss status, number of books at home, and TV availability are not statistically significant. However, there is a strong correlation with mother’s education and location (i.e., whether residing in Klang Valley). This perhaps indicates that educated mothers are more likely to hold teachers accountable for missing lessons and/or monitor their children better over attending online lessons. At the same time, we found no correlation between “studying alone” and “missing online school lessons” (the Pearson correlation coefficient is zero and not reported). This implies that students unsupervised by family members were not those disproportionately reporting missing online lessons.

Figure 13: “Missing” Online School Lessons by Selected Socioeconomic Correlates



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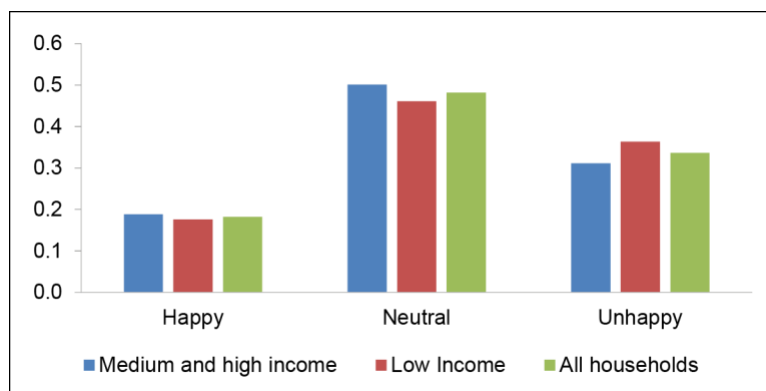
Figure 13 continued



Notes: (1) The outcome variable “missing online school lesson” plotted is “proportion of students who received no online lessons from the school during the MCO.” (2) 95% confidence interval reported.

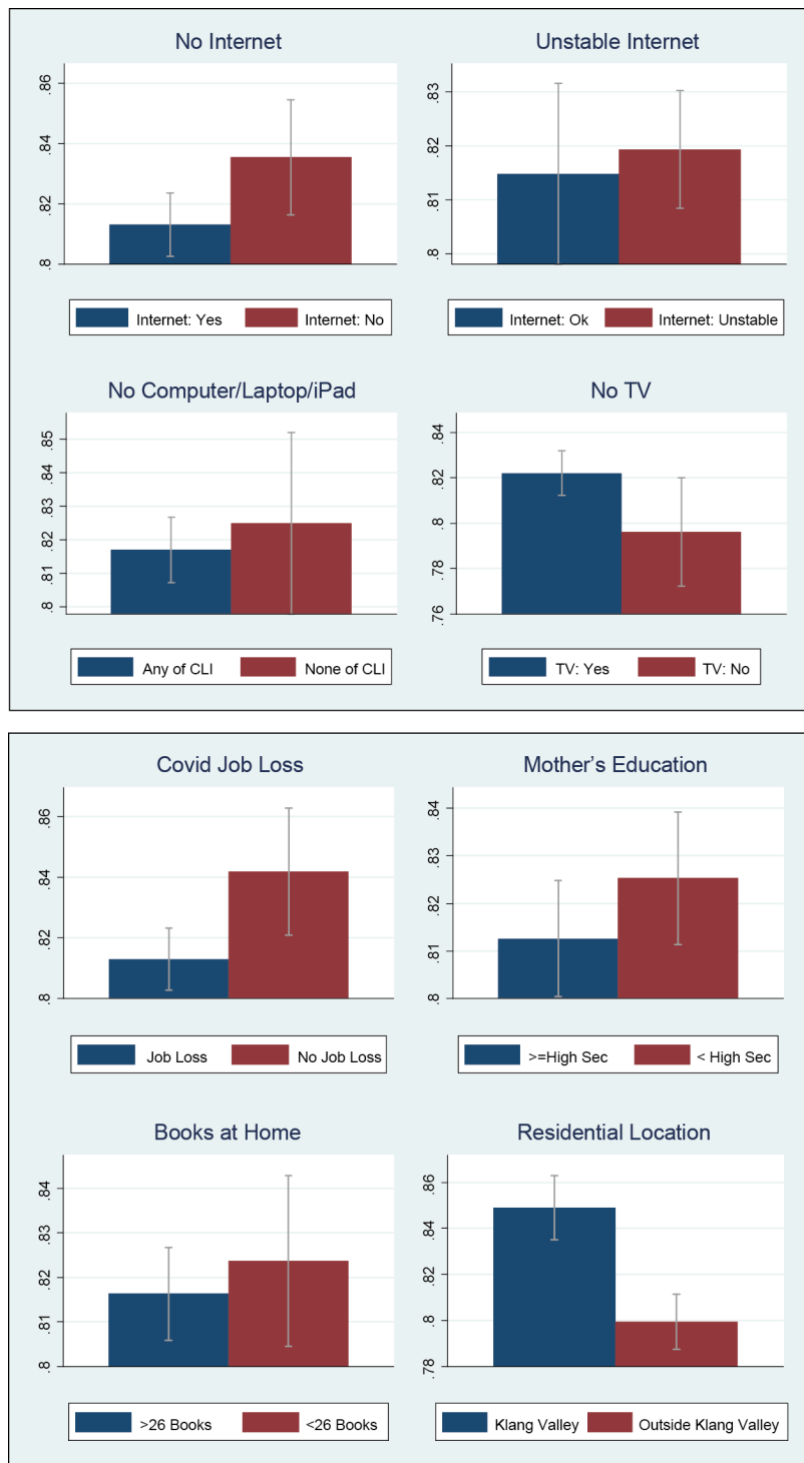
We additionally asked our student respondents about their overall experience with the shift from on-site to online schooling under the PdPR following the school closure. Most learners were not happy with the switch (see Figure 14). Only 18.2% were happy with the switch to online education (under the PdPR) (33.60% were unhappy; the remaining 48.2% were neutral). Low-income students were relatively unhappier (36%) than medium- and middle/high-income students (31%).

Figure 14: Students’ Assessment of Switch to Online Education



Notes: Outcome variable is based on responses to the following question: "Teaching and learning have switched to online platforms since MCO 1.0 last year. How do you feel about this?"

Figure 15: “Unhappiness” with Online Schooling



Notes: 95% confidence interval reported. Unhappiness is defined as either “not happy” or “neutral.”

In order to understand better the related socioeconomic correlates, we re-examined the data disaggregating across various socioeconomic groups. As seen from Figure 15, learners who report being “not happy with online schooling” are broadly spread out across different socioeconomic groups. In other words, regardless of Internet or digital technology access, learners are not happy about the switch to online schooling.

One exception is students from Kuala Lumpur and the country’s most urbanized and economically advanced state – Selangor. Together, they are popularly known as the Klang Valley region. Given that this is the most prosperous and educationally advanced part of the country, dissatisfaction with online schooling under the PdPR once again raises concerns about educational governance during school closure.

4.3 Learner Attitudes towards Education and School Reopening

Beyond the PdPR, we examined the overall attitude towards education whilst schools remained closed, including attitudes towards online vs on-site education once schools reopen. The majority (92%) of students reported that they had no intention of discontinuing schooling during the current school year (Figure 16). However, this also implies that 8% of students were at risk of dropping out. That said, when asked about school reopening, the majority (i.e., 80%) responded that they preferred to have physical schooling, either fully on-site or blended with online lessons (Figure 17). But a sizable proportion (20%) were in favor of continuing with home-based schooling.¹⁵

To better understand the desire to “return to school,” we again disaggregated the data by various SES indicators. The results are presented in Figure 18. The preference for “returning to school” is broad-based. All students want to return to school regardless of home conditions. But two aspects stand out: The desire is greater among students without any digital gadget at home. And as before, students from Malaysia’s most urbanized and advanced area – Klang Valley – are most eager to return to school.

Figure 16: Intention to Continue in Education

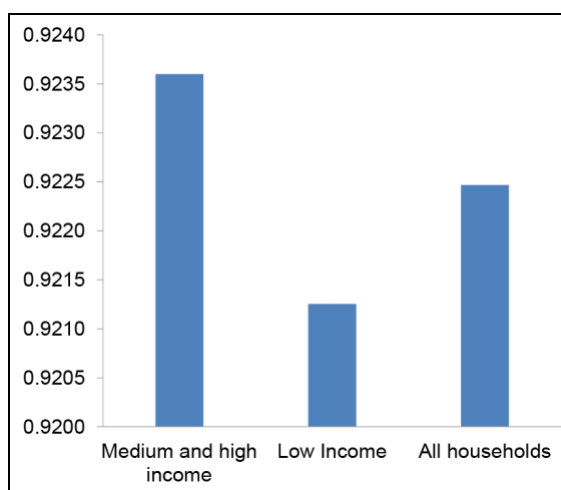
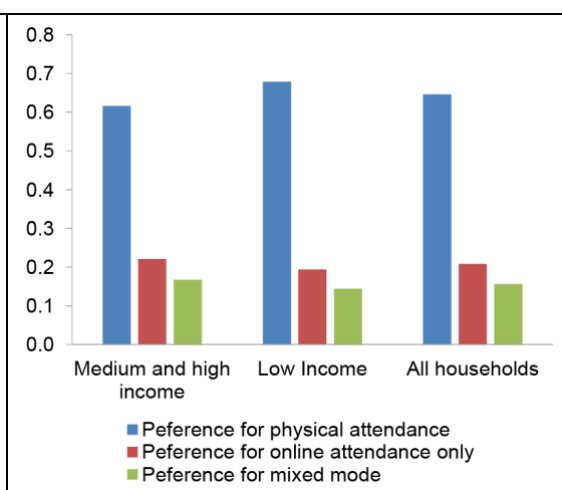


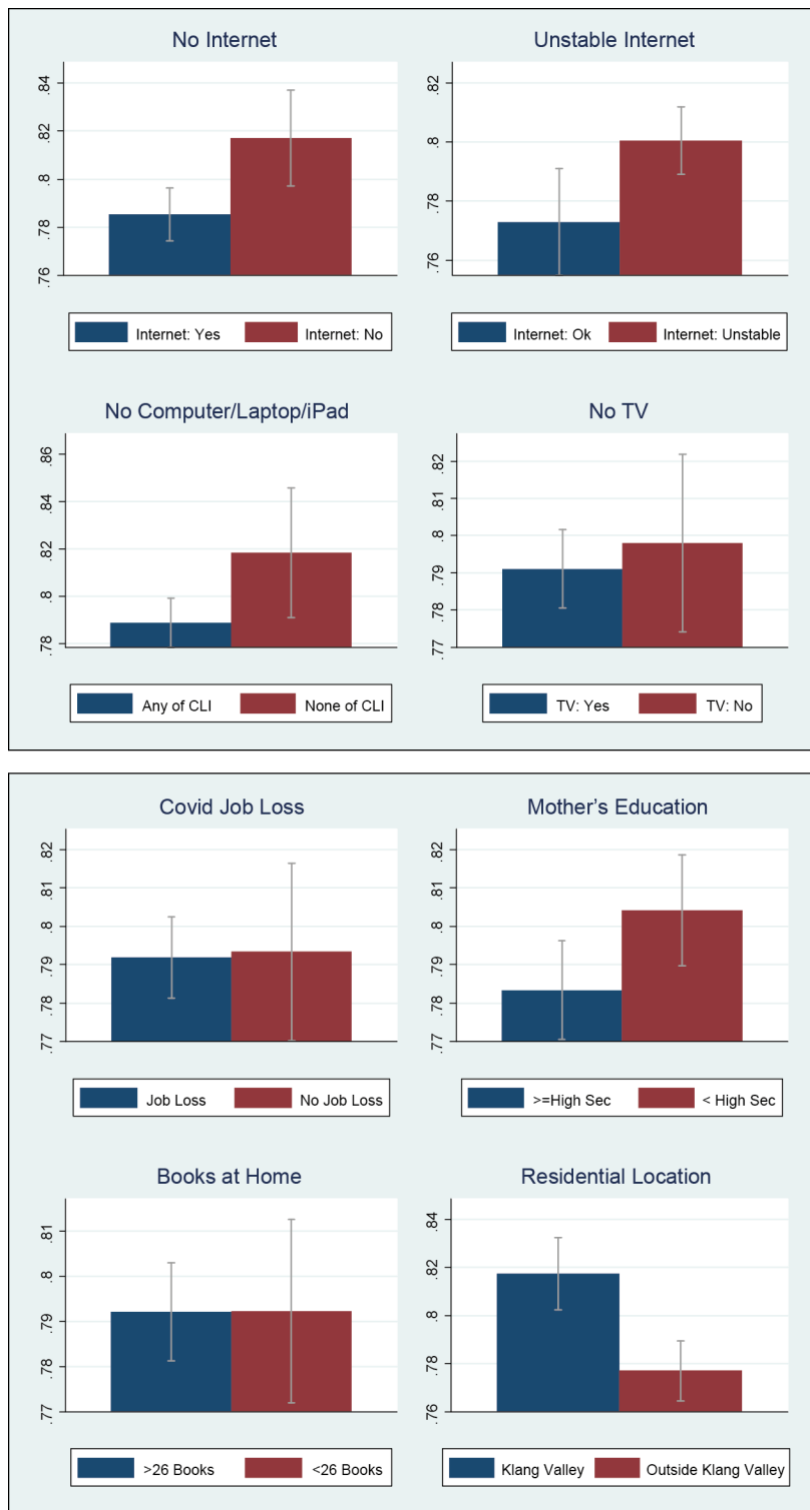
Figure 17: Preference for Returning to On-site Schooling



Notes: Figure 16 is based on answers to the following question: “Do you plan to continue your school education this year (i.e., 2021)?” Figure 17 is based on answers to the following question: “If school reopens this year, will you attend classes physically or do you prefer online lessons?”

¹⁵ More specifically, 66.4% said that they wished to attend school physically while 9.5% preferred a combination of physical and online learning; 15% said they did not want physical attendance while another 4.5% said that they preferred to continue online (i.e., 19.5% preferred a nonphysical setting).

Figure 18: Preference for “Return to On-site Schooling”



Notes: 95% confidence interval reported. The outcome variable is “proportion of students who say that they prefer to have physical schooling, either fully on-site or blended with online lessons.”

4.4 Heterogeneity by Student Gender and Region

Throughout, we have reported differences in PdPR-related indicators by household income level. In this section, we summarize similar differences by student gender (male vs female) and location (Klang Valley vs rest of Malaysia). Since HLSMS 2021 does not distinguish between rural and urban locations, comparing Klang Valley with the rest of Malaysia helps in understanding regional disparity given that the former is the most urbanized part of the country.

Table 1 reports the results alongside t-test results of difference of means/proportions. We don't see a significant gender gap in COVID-19-related shocks except that a higher proportion of boys report having worked to support the family during the first year of the pandemic. In terms of access to learning materials, girls report having more books at home. There is also no systematic gender gap in (i) access to a digital device at the household level, (ii) reported usage by a specific learner, and (iii) family support for home-based learning. However, some differences are significant when it comes to challenges faced with home-based learning. For instance, a higher proportion of girls report an increase in household chores (0.58) vis-à-vis boys (0.48) as a challenge. In addition, more girls report family disturbance (58%) compared to boys (48%). But there is no gender difference in challenges related to access/use of digital devices. Neither do we find a systematic gender gap in various types of online communication tools used for the PdPR. Reassuringly, the reported incidence of regular online learning sessions by teachers is identical across boys and girls. Turning to the use and subjective assessment of PdPR programs, we notice some gender difference. Boys are more likely to have not watched any PdPR program. They are also likely to have found the programs difficult to follow, compared to girls. Lastly, there is no gender difference in preference for school attendance in person, though girls (9%) show significantly less preference for mixed-mode schooling compared to boys (11%).

Table 1: Gender and Regional Differences in Key Measures and Indicators

Indicators	Male	Female	(t-test)	In Klang Valley	Outside Klang Valley	(t-test)
COVID-19 exposure and related shocks						
<i>Job loss by parents</i>	0.18	0.17		0.18	0.17	**
<i>Child labor by the learner</i>	0.09	0.06	*	0.06	0.07	
<i>COVID-19 infection of family member</i>	0.02	0.02		0.02	0.02	
Number of books at home						
<26	0.08	0.04	*	0.05	0.05	
26–50	0.23	0.22		0.22	0.22	
51–100	0.20	0.21		0.22	0.21	
101–200	0.12	0.16	*	0.15	0.16	
201–500	0.08	0.14	*	0.11	0.13	**
>500	0.07	0.09	*	0.08	0.09	
Access to EdTech / digital device at home						
TV	0.81	0.85	*	0.84	0.84	
Mobile	0.99	0.99		0.99	0.99	
Computer	0.34	0.28	*	0.32	0.28	*
Laptop	0.80	0.83	*	0.86	0.81	*
Tablet (and iPad)	0.30	0.30		0.33	0.28	*
Any of CLI (computer, laptop, or tablet/iPad)	0.88	0.89		0.92	0.87	*

continued on next page

Table 1 *continued*

Indicators	Male	Female	(t-test)	In Klang Valley	Outside Klang Valley	(t-test)
EdTech use at home						
<i>Mobile</i>	0.94	0.96	*	0.93	0.96	*
<i>Computer</i>	0.18	0.12	*	0.14	0.13	***
<i>Laptop</i>	0.62	0.66	*	0.69	0.62	*
<i>Tablet (and iPad)</i>	0.15	0.16		0.18	0.15	*
<i>Any of CLI (computer, laptop, or tablet/iPad)</i>	0.73	0.74		0.79	0.71	*
Family support for home-based learning						
<i>Mother</i>	0.30	0.29		0.27	0.31	*
<i>Father</i>	0.22	0.20		0.19	0.22	*
<i>Siblings</i>	0.25	0.28	*	0.24	0.30	*
<i>Relatives</i>	0.15	0.15		0.14	0.16	
<i>Study alone</i>	0.82	0.87	*	0.87	0.86	
<i>Both parents</i>	0.19	0.17		0.16	0.19	*
Challenges of home-based learning						
<i>Increase in HH chores</i>	0.46	0.58	*	0.58	0.54	*
<i>No Internet at home</i>	0.20	0.22	**	0.17	0.24	*
<i>Unstable Internet</i>	0.69	0.70		0.66	0.72	*
<i>Family disturbance</i>	0.54	0.64	*	0.66	0.59	*
<i>Having to share a digital gadget</i>	0.23	0.25		0.26	0.24	*
Type of online communication tools used						
<i>WhatsApp</i>	0.78	0.83	*	0.80	0.83	*
<i>Zoom</i>	0.74	0.78	*	0.79	0.76	*
<i>GoogleClass</i>	0.93	0.95	***	0.96	0.93	*
<i>GoogleMeet</i>	0.87	0.89	**	0.92	0.87	*
<i>SKYPE</i>	0.04	0.03	**	0.03	0.02	**
<i>Telegram</i>	0.81	0.86	*	0.79	0.88	*
Regularity of online classes						
<i>Yes regularly</i>	0.51	0.52		0.56	0.50	*
<i>Yes but irregularly</i>	0.26	0.24	***	0.24	0.25	
<i>No</i>	0.21	0.22		0.19	0.24	*
Use and quality of PdPR programs						
<i>Did not use PdPR online/TV programs</i>	0.57	0.49	*	0.56	0.48	*
<i>Quality of PdPR programs (easy to follow)</i>	0.57	0.68	*	0.61	0.68	*
Students' assessment of switch to online education						
<i>Happy</i>	0.19	0.18		0.15	0.20	*
<i>Neutral</i>	0.46	0.49	***	0.51	0.47	*
<i>Unhappy</i>	0.35	0.33		0.34	0.33	
Aspirations and preferences for schooling						
<i>Intention to continue in education</i>	0.92	0.92		0.92	0.92	
<i>Preference for return to on-site schooling</i>						
<i>Preference for physical attendance</i>	0.66	0.64		0.65	0.64	
<i>Preference for online attendance only</i>	0.17	0.22	*	0.18	0.22	*
<i>Preference for mixed mode</i>	0.11	0.09	**	0.11	0.09	*

Notes: (1) t-statistics corresponds to two-tailed tests. (2) *, **, and *** indicate significance at 1%, 5%, and 10% level, respectively. (3) Data source: HLSMS 2021.

Turning to location-wise differences, we don't see a significant gender gap in COVID-19-related shocks. While learners from Klang Valley report a significantly higher proportion of parents suffering job loss, the difference is not large. The distribution of books at home does not vary significantly by location. However, there is a systematic regional advantage in favor of Klang Valley in (i) access to a digital device at home (e.g., computer, laptop, or tablet) and (ii) reported usage by the learner. While a significantly higher proportion of learners from Klang Valley report using a computer, laptop, or tablet, those from outside Klang Valley rely more on a mobile phone. Interestingly, learners outside Klang Valley also report receiving significantly more support from family members, suggesting that urban parents are more time-constrained in assisting children from the PdPR. Moreover, students from Klang Valley are also significantly more likely to report incidents of increased child labor and family disturbance as challenges of online learning. On the other hand, those from outside Klang Valley report significantly more often EdTech-related challenges such as no Internet and unstable Internet at home. We also note significant contrasting regional differences in the types of online communication tools used for homeschooling purposes. WhatsApp and Telegram are significantly more common among learners outside Klang Valley, and Zoom and Google Meet in Klang Valley. Reported incidence of online learning sessions by teachers is also significantly different by location: Students from outside Klang Valley not only reportedly experienced irregular sessions, but a larger proportion also reported not having any online lessons. The latter could be driven by digitally excluded locations where the PdPR could be implemented only in offline mode. Turning to the use and subjective assessment of PdPR programs, we find some important differences. A significantly larger proportion of students from Klang Valley (56%) did not use/watch any PdPR online/TV programs compared to 48% outside Klang Valley. Lastly, there is no location-specific difference in aspirations to continue in education, though learners in Klang Valley (11%) show a significantly greater preference for mixed-mode schooling compared to those outside Klang Valley (9%).

5. DISCUSSION AND POLICY IMPLICATIONS

Our results are consistent with the emerging academic evidence evaluating government's distance learning programs in at least three aspects. First, similarly to developing country evidence that suggests that students from higher-educated and socioeconomically better-off families are more likely to experience remote schooling (e.g., Hossain 2021), we also find evidence that a higher proportion of students from low-income households and those less educated mothers report receiving no online lessons. Second, our finding that Malaysian learners favor regular classes and a significant proportion of them are dissatisfied with online learning is consistent with existing developing country studies reporting negative feedback from students relating to remote learning during school closure (e.g., see Selvaraj et al. 2021) and existing nonacademic literature on Malaysia (e.g., UNICEF and UNFPA 2020). Third, our finding of the divide in EdTech access and usage is also consistent with the available developing country evidence on the divide in effective use of learning technology (e.g., see Cappelle et al. 2021).

The findings presented in this study also have important implications given the launch of several policy documents and plans. They also confirm some of the existing concerns of the government of Malaysia over the PdPR and the inadequacy of past measures. For instance, Malaysia's Penjana National Economic Recovery Plan supported various state-business joint initiatives to improve access to online education

services delivered under the PdPR scheme.¹⁶ This also encouraged some private Internet providers to launch additional support services. In addition, immediately after the first school closure, free Internet was given to customers of all Malaysian telecommunication operators to a value of RM600 million. Furthermore, an additional sum of RM400 million was invested to widen the network coverage and capacity, maintaining the stability, high quality, and availability of telecommunication services.¹⁷ This ensured access to a range of education and productivity-related services that were considered critical for successful implementation of the PdPR scheme. However, these measures have not been adequate.

The latest five-year plan for the period 2021–2025 has emphasized “improving access to quality and affordable education (Supporting the M40 towards an Equitable Society)” as one of the key strategies for developing young people. At the same time, the 12th Malaysia Plan¹⁸ has also acknowledged new challenges created by the pandemic as well as the digital and social divides:

Due to the COVID-19 pandemic, students in schools, HEIs, and TVET institutions have to undergo online teaching and learning. This has caused problems for students with limited Internet access, especially those who live in rural and remote areas or from low-income families. Teachers and instructors in rural areas also face the challenge of ensuring that online teaching and learning sessions run smoothly. This has further hampered efforts in providing quality education in Sabah and Sarawak. (12th Malaysia Plan, pages 7–10)

In this context, as the first independent assessment of the PdPR, our findings are relevant, particularly given the call for an evidence-based policy in the 12th Malaysia Plan for post-pandemic educational recovery. The recently announced annual budget for the fiscal year 2022 has also retained the single focus on investment in physical inputs (e.g., laptops, school facilities, and buildings) in low-income schools and communities (including the majority in Bumiputera).¹⁹ Our findings on the digital divide by income groups in the Bumiputera community provide some justification for these measures. Equally, recent budgetary provisions aimed at improving EdTech access can be justified given our finding related to equity, i.e., there are unequal opportunities for the use of devices available at home for learning purposes. One measure in Budget 2022 is targeted at the Bumiputera community whereby the higher learning institution (IPT) students from B40 families will receive a free tablet through the *PerantiSiswa Keluarga Malaysia* initiative.²⁰ To this end, the government has allocated RM450 million. In addition, there is a special tax relief of up to RM2,500 for the purchase of mobile phones, computers, and tablets until 31 December 2022.²¹

¹⁶ Teks Ucapan: Pelan Jana Semula Ekonomi Negara (PENJANA) (11 August 2020). Retrieved 11 June 2021, from <https://www.pmo.gov.my/2020/06/teks-ucapan-pelan-jana-semula-ekonomi-negara-penjana/>.

¹⁷ Prominent telecommunications operators also provided free Internet services for all Malaysian students. Students were given free 1 gigabyte (GB) of Internet usage daily between 8am and 6pm. Moreover, students had this access until 31 December 2020.

¹⁸ <https://www.thestar.com.my/news/nation/2021/09/28/education-sector-calls-for-more-funding-and-autonomy>.

¹⁹ <https://www.thestar.com.my/news/nation/2021/10/30/huge-boost-for-education>.

²⁰ https://www.mcmc.gov.my/skmmgovmy/media/General/pdf2/FAQ_ENG_PERANTI_SISWA_KELUARGA_MALAYSIA_20211101.pdf.

²¹ <https://www.mof.gov.my/portal/en/news/press-citations/budget-2022-highlights>.

That said, our findings also highlight two important gaps in recent policy documents on Malaysia. The first is the lack of recognition of the inequality in familial support in terms of assistance for home study. Alongside teachers, day-to-day home learning operations also depend on effective monitoring of students by parents and family members. Yet the sudden shift of lessons to the home setting has left parents globally with little time to prepare for their new supporting role (UNESCO, UNICEF, and World Bank 2020). This is likely to be a serious challenge for low-income Bumiputera parents. PdPR 1.0 lacked adequate parental guidance to assist children with home-based learning. While PdPR 2.0 has added some new instructions to aid parents in their new role, there is no clear provisions to build parental capability.

The second important gap relates to the need to look into the potential failure of governance in the delivery of the PdPR in terms of better online monitoring of teachers and learners by school authorities. According to student reports, not only has online schooling been irregular, but it has also proved unpopular among learners, including those who have received such lessons regularly. This evidence is suggestive of gaps in governance and compliance by school authorities regarding online lesson provision. But the lack of parental capability could be an additional contributory factor. School principals are responsible for assessing the learning needs of their students, coordinating daily lesson plans (e.g., deciding whether to pool lessons across classes in a given grade for a subject), and monitoring teachers. In contrast, subject teachers are in charge of enforcing lesson plans and communicating with students and teachers. Parents, on the other hand, are supposed to report any difficulties back to teachers and assist in the coordination of offline lessons by visiting the school and collecting learning materials from teachers. In the first year of the pandemic (i.e., under PdPR 1.0), the Ministry of Education had no mechanism in place to track student attendance and teacher activities in real time. So differentiated, need-based teaching could not be ensured. In the absence of a centralized mechanism for attendance monitoring under PdPR 1.0, regular monitoring of schools by local authorities remained another challenge.²²

Lastly, our findings also have relevance for the new social sciences literature on EdTech. This literature has focused on four areas: (a) access to technology; (b) the effectiveness of CAL; (iii) technology-enabled behavioral interventions in education; and (iv) the effectiveness of online learning (Escueta et al. 2020).²³ Available positive evidence of technology is mostly based on supplemental funding for technology or additional class time. The emerging body of evidence (including causal studies) confirms there is little impact from providing hardware alone on learning outcomes. Considering this consensus in the literature, remedial policy response for COVID-19 educational recovery needs to look beyond closing the digital divide.

6. CONCLUSION

COVID-19 has caused the longest school shutdown all over the world, forcing education to shift from offline to online education in home settings. In this context, this study focused on three questions: first, home conditions and provisions in terms of learning materials, and technology access and use, in order to assess the preparedness of Malaysian households to support the PdPR, and whether the disadvantage is associated with poverty (i.e., low family income); second, what is the

²² Only since June 2021 has direct uploading of attendance records to the MoE server been regularized.

²³ For a more recent review of EdTech in the developing country context, see Rodriguez-Segura (2020); for a global review, see Dreesen et al. (2020).

nature of participation in online schooling and the extent of the use of the PdPR programme?; third, how did learners evaluate the PdPR, and what is the attitude towards schools reopening?

There are three main takeaways from this study. First, there are unequal learning opportunities at home, not just in terms of the availability of, and access to, resources, but also in terms of support from family members. This is not unexpected given disruptions to family circumstances due to the pandemic, including job and income loss. Second, online schooling sessions have been irregular and not very popular among learners. Third, the preference for “returning to school” is strong among learners. This is unsurprising given the less than universal coverage of online schooling, the lack of popularity among Malaysian (Bumiputera) learners, the difficulty in following online programs, and unequal learning opportunities at home.²⁴ Overall, these patterns are consistent with popular perceptions of the PdPR and evidence from other parts of developing Asia.

But how should we interpret the data on the widespread dissatisfaction with online schooling and the extent of regular online sessions organized by schools? We have shown that these do not correlate well with Internet provisions. Of all the correlates considered, one that stood out is location. Even among students from Klang Valley, 18% report not receiving any schooling sessions and learners are also more eager to return to physical school. This implies that while demand-side constraints remained relevant and important, there was also a possible governance failure during PdPR 1 (e.g., a lack of effective real-time monitoring of student attendance and teacher activities). At the same time, this could be partly explained by the flexibility and discretion that teachers enjoyed as per the PdPR guideline. According to the official directive, the PdPR can also be implemented offline or off-site, particularly in locations with poor Internet access or underprovided-for communities with limited digital gadgets at home. We could not formally investigate these possibilities in the absence of school-level data and we have left this for future research.

²⁴ However, even if online lessons were regular and easy to follow, some students might still prefer on-site education for other reasons such as a preference for in-school socialization.

APPENDIX A: SUMMARY NOTE ON THE OFFICIAL GUIDELINE FOR THE PdPR¹

The Ministry of Education Malaysia has prepared a comprehensive Guide to Facilitate Teaching and Learning at Home Version 2 (PdPR 2.0). To this end, a “Home Teaching and Learning Manual Version 2” was developed as an improvement on the “Home Teaching and Learning Manual” released on 2 October 2020. This manual was developed to assist teachers implementing the PdPR. This manual is also expected to serve as a reference for school administrators, officers of the District Education Office (PPD) and the State Education Department (JPN), as well as divisions in the Ministry of Education Malaysia (KPM). It should be read in conjunction with the professional circular letter, release letter, notification letter, and relevant MOE guidelines that are currently in force. Schools are required to ensure that all students can follow the PdPR based on their needs and readiness. Equally, teachers need to identify appropriate PdPR methods so that students are able to master the content of the prescribed subjects. Teachers should also explore different and appropriate ways to enable the continuity and increase of student involvement in the PdPR. Among the PdPR methods that can be used are learning using modules and project-based learning. Below we reproduce some of the key instructions for schools, teachers, and parents in the PdPR guideline.

- 11.1. Learning modules need to be planned in a structured manner to meet the needs of the subject and implemented within the appropriate period.
- 11.2. The learning module developed should contain the following:
 - 11.2.1. Target students (preschool, primary, secondary).
 - 11.2.2. Module title or theme.
 - 11.2.3. Learning objectives based on the Curriculum and Assessment Standard Document (DSKP).
 - 11.2.4. Activity implementation period.
 - 11.2.5. Description related to the implementation of the activity.
 - 11.2.6. Structured notes related to the module title.
 - 11.2.7. Activities relevant to the topic of the Professional Development Plan (PdP) (examples).
 - 11.2.8. Assessment to measure student mastery.
- 11.3. This learning module is distributed to students based on the Daily Teaching Plan (RPH) set.
- 11.4. Students need to submit the results of the assignment for review/assessment and get feedback from the teacher before receiving the next learning module.
- 11.5. Project-based Home Teaching and Learning (PdPR) is implemented according to subjects or a combination of several subjects. The implementation is as follows:
 - 11.5.1. Give a title to the student.
 - 11.5.2. Guide students to identify methods of completing a given project.
 - 11.5.3. Guide students to identify the materials, equipment, and costs needed.
 - 11.5.4. Determine the time frame to complete the project.
 - 11.5.5. Guide students to complete projects.
 - 11.5.6. Present the results of the project.
 - 11.5.7. Reflect on the project revenue process.

¹ This is a reproduction (translation) of the official guideline on PdPR 2.0 as available from the link <https://www.pendidik2u.my/pengajaran-dan-pembelajaran-di-rumah-pdpr-2-0/> (accessed: 30 October 2021).

11.6. Teachers can also implement other Professional Development Plan (PdP) methods such as a flipped classroom, inquiry-based learning, mastery learning, contextual learning, and problem-solving learning.

Subject Teachers

6.3.1. Determine the content of the curriculum to be implemented based on the PdPR timetable.

6.3.2. Provide PdP materials and tutorials that are appropriate in the time allocation set in the PdPR timetable and can be reaccessed by students.

6.3.3. Implement PdPR based on the set time schedule.

6.3.4. Administer Pentaksiran Bilik Darjah (PBD) in parallel with the implementation of the PdPR and tutorials implemented.

6.3.5. Networking with parents/guardians or students in implementing the PdPR timetable.

6.3.6. Inform parents/guardians and students in the event of any schedule changes.

Parents/Guardians

6.4.1. Ensure that the child/ward receives the PdPR timetable provided by the school.

6.4.2. Ensure that the child/ward follows the PdPR based on the set time schedule.

6.4.3. Communicate with the school to support the learning of the child/ward.

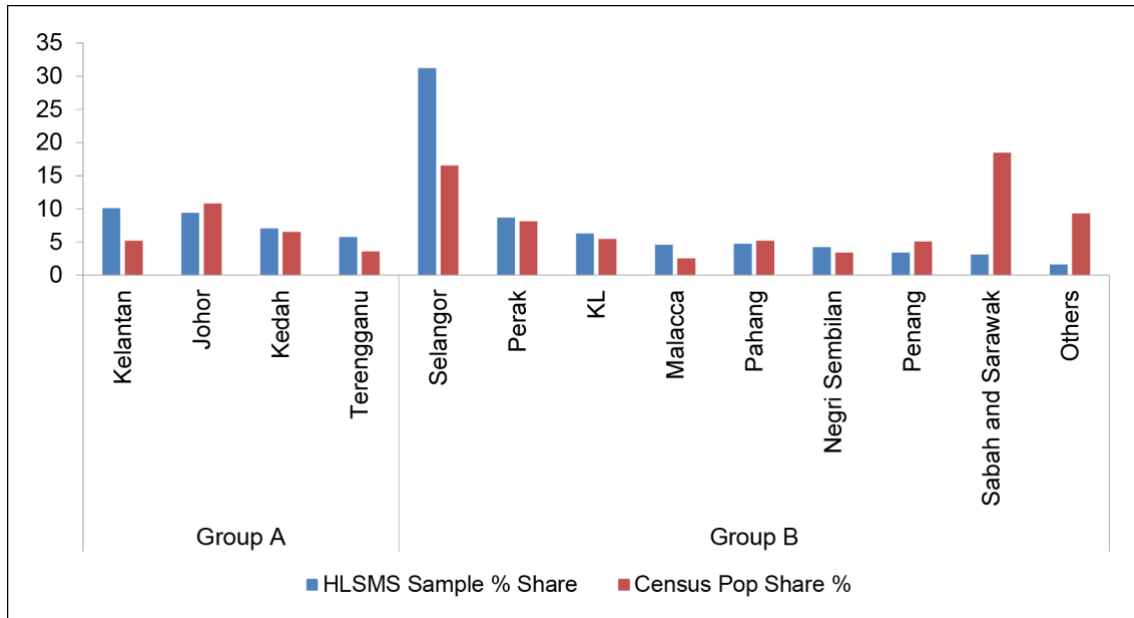
6.4.4. Provide support in helping the child/ward to learn.

Appendix Table A: Pearson's Correlation Coefficient Matrix – Family Support for Home Study

	Mother	Father	Sibling	Relative	Alone	Both parents
Mother	1					
Father	0.64 (0.00)	1				
Sibling	0.24 (0.00)	0.23 (0.00)	1			
Relative	0.12 (0.00)	0.12 (0.00)	0.10 (0.00)	1		
Alone	-0.27 (0.00)	-0.22 (0.00)	-0.27 (0.00)	-0.07 (0.00)	1	
Both parents	0.73 (0.00)	0.91 (0.00)	0.24 (0.00)	0.13 (0.00)	-0.22 (0.00)	1

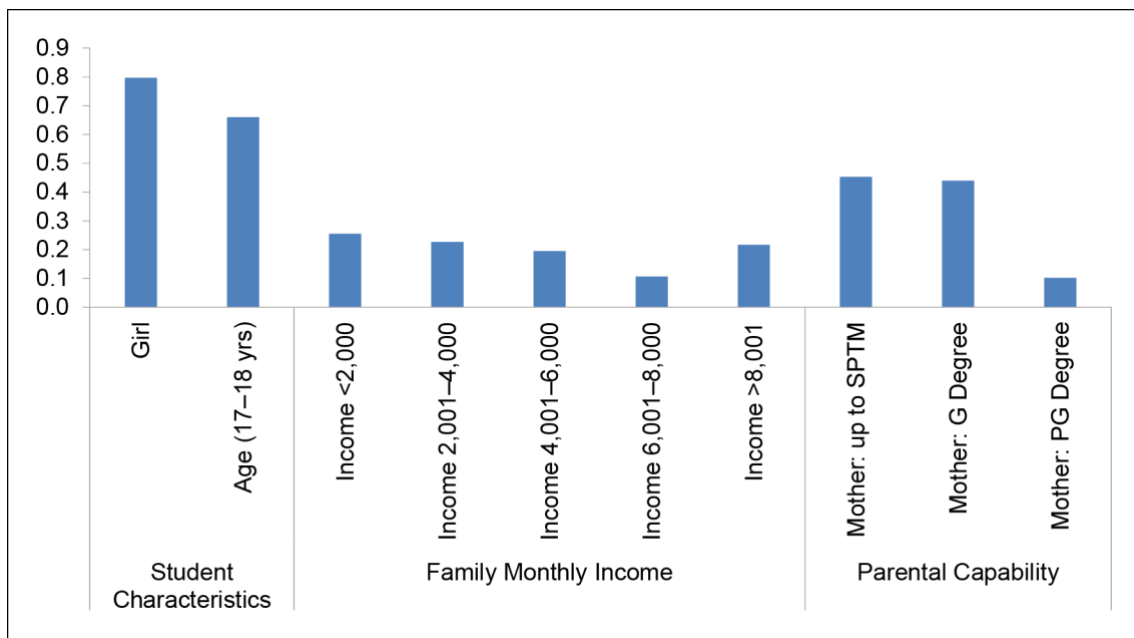
Note: p-values in parentheses.

Appendix Figure 1: Sample Composition: HLSMS 2021 Vs Census 2010



Notes: Population census data are from the Department of Statistics Malaysia. Grouping of states is based on the government’s circular on school reopening dates. At the time of conducting this study, the proposed new session was to start between 13 June and 15 July for **Group A** schools (i.e., those in Johor, Kedah, Kelantan, and Terengganu), and between 14 June and 16 July for **Group B** schools (i.e., those in Perlis, Penang, Perak, Selangor, Negeri Sembilan, Melaka, Pahang, Sabah, Sarawak, Kuala Lumpur, Labuan, and Putrajaya).

Appendix Figure 2: Sample Composition by Demographic and Family Characteristics



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