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Press Release

**HKU study suggests that COVID-19 may widen the digital divide among students and schools –
Findings from a Study of Hong Kong Students' Digital Citizenship Development**

An interdisciplinary research team led by researchers from the University of Hong Kong (HKU) released its initial findings on a study "Hong Kong Students' Digital Citizenship Development", which show huge intra‑ and inter-school differences in students' digital competence among primary and secondary schools in Hong Kong. With online teaching and learning gaining popularity, the gap may continue to further widen.

The team, led by Professor Nancy Law, Deputy Director, Centre for Information Technology in Education, Faculty of Education, HKU, comprises prominent researchers from HKU and the Hong Kong University of Science and Technology (HKUST) and international experts, from the fields of Education, Learning Sciences and Learning Technology, Computer Science and Engineering, Social Science, Arts, Journalism, Pediatrics and Adolescent Medicine.

The Digital Citizenship Project is a five-year longitudinal study funded by the Research Grants Council of the HKSAR under its Theme-based Research Scheme to explore how digital citizenship develops from childhood to early adulthood and how the different background factors such as schools and families may correlate with such development. The first wave of data collection was conducted via questionnaire in the 2018-2019 school year, involving a total of **over 2,000 primary 3, secondary 1 and secondary 3 students, and about 360 teachers**. The findings were released today (April 21).

Digital citizenship is about whether students have the competence and the disposition to use digital technology. It is an important capacity for the individual to be able to live, learn and participate effectively as a citizen in the digital society, and for their future career. Findings on HK students' digital citizenship helps us to better understand the challenges that students, families, teachers and schools are facing now during this period of school closure due to COVID-19, and what needs to be done when schools reopen.

Digital competence is a core element of digital citizenship capacity. The study results show that most students have mastered the basic skills in all the five key areas of digital literacy: information and data literacy, communication and collaboration, digital content creation, digital safety, and problem solving using information and communication technology. However, most students' competence levels are not adequate to handle complex tasks. For example, they are unable to formulate a good search statement with multiple, well selected keywords to get good focused results, or evaluate the relevance or credibility of information. They are also not able to formulate suitable communication suited for a particular purpose or a specific audience.

Major Findings
Differences in digital performance exist within and between schools:
- Secondary students had significantly higher competence than primary students, but secondary 3 students were only slightly more competent than secondary 1 students.
- Huge interschool performance divides at all three grade levels in the study. In the highest performing schools, more than 75% of their students outperform the top 25% achievers of the lowest performing schools.
- The interschool performance difference was larger at the secondary level compared to the primary.
- Interschool differences were so great that half of the primary 3 students in one school outperformed 75% of the secondary 3 students in another school.

- Huge differences in performance were recorded within schools. This means, in the same class, some students can be highly competent while there may be others whose digital competence were minimal. This difference also was larger at higher grade levels.

How students use digital devices at home and in school:
- 67% of students reported spending less than an hour per day on digital technology use for learning in school.
- Whether at home or at school, digital technology use was mostly for leisure activities or communication with friends and family.
- About 10% of secondary school students exhibited behavior that are indicative of internet addiction. Indicators of internet addiction include: failing to cut down time spent on the Internet, losing sleep due to nightly logons, schoolwork suffering because of the amount of time spent online.
- 25% of primary 3 and secondary 1 students, and 33% of secondary 3 students have been a victim of cyberbullying. Cyberbullying behavior includes posting or forwarding hurtful information including embarrassing photos, videos or other media that cause distress; spreading rumors; exposing someone's personal information.
- About 35% of all surveyed students have been either a victim or a perpetrator, and of these about half have been both victims and perpetrators. Often, perpetrators may think that they are only playing or making a joke, and may not be aware that such actions may hurt others.
- Students at all three grade levels reported having engaged in risky online behavior previously, and a higher percentage reported such behavior at higher grade levels. The most popular risky behaviors were looking for new friends on the internet, pretending to be older to get access to some websites, and adding people they have never met to their online friends list.
- About 10% to 20% of students reported having encountered different digital security issues. These include having their personal information or password stolen, or virus attacks on their digital devices. Most primary 3 students and some secondary students reported not knowing how to handle some digital security problems such as which information should be shared online, how to change settings for which content to share with whom, and how to remove friends from a contact list.

The study also found that students' digital competence affects their digital wellbeing. Those with higher competence scores were more confident about handling online safety issues. Those who have lower scores were more likely to encounter cyberbullying experiences.

In addition to a divide in digital competence performance, there were divides in family support for digital learning. Only about 40% of students said that they would discuss about Internet use and digital safety with their parents. Most students have access to a smartphone, which are good for communication and leisure, but quite inefficient and sometime inadequate for intensive study and work purposes. About 10% of students have no access to devices with large displays such as desktop or laptop computers, or tablets. For those who have such access, over 40% had to share their use with other family members.

Implications of the findings on extensive use of online learning at home during COVID-19 school closure
"From the findings, we can see that before the COVID-19 pandemic, nearly all students had access to some form of digital technology and have the competence to handle basic tasks. However, e-Learning has only played a minor role in schoolwork. Further, there were huge divides in digital competence performance and family support," said Professor Nancy Law, who led the study.

Professor Law expected that the pre-existing digital divides will further widen after the pandemic if not properly mitigated. She said: "During the pandemic, online learning has become the only channel to conduct teaching and learning. A minimal level of digital competence and technology access would be needed to participate in online learning activities organised by schools. What and how a school organises its online learning provisions depends on the school leaders' and teachers' knowledge and understanding of their students' level of digital competence and technology access. Pre-existing digital divides is expected to have an amplifier effect on the outcomes of the online learning experiences. Thus, if unmitigated, online learning

brought about by school suspension would likely further enlarge not only the digital competence divide, but also academic performance divides across the curriculum."

School education beyond COVID-19

"In order to forge a path forward to mitigate the challenges described, one needs to recognise also the positive outcomes that this period of online learning will likely bring: increased digital competence in both students and teachers, technology infrastructure for online learning delivery in schools, and teacher expertise in different forms of online learning delivery." She added.

The team recommended that post-COVID-19 Hong Kong should leverage the unique opportunity to build partnership across different stakeholder communities to develop comprehensive, coordinated strategies and plans to enhance students' digital competence, reduce digital divide and build a robust online learning support system for an overall improved educational system that is better suited for educating 21st century learners. At the system level, there is a need for updating the current IT skills curriculum to a digital competence framework, which should be implemented through integration with learning across the curriculum. Establishing a common vision and building partnership structures and mechanisms across different stakeholder communities would be a crucial step towards enhancing students' digital citizenship capacity.

Professor A. Lin Goodwin, Dean of the Faculty of Education, remarked, "This study could not be more timely as the pandemic has forced the world -ready or not- to embrace digital technologies for just about every aspect of living. What we are learning from this ambitious and innovative research study is that technology is only as useful as the humans using it, and that we have so much to learn about how young people can be supported to grow and develop from digital natives into thoughtful and wise digital citizens."

The Digital Citizenship project will conduct data collection for wave two of its longitudinal study during the 2020-2021 academic year. The new data collected from the same set of students will facilitate our understanding of students' development as digital citizens.

For more details of the Digital Citizenship project and the report, please visit https://www.ecitizen.hk/publications/reports. To review the e-version of the press release, and download photos and presentation file, please visit http://web.edu.hku.hk/press.

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April 21, 2020