INFOSHEET ON STRENGTHENING DIGITAL LITERACY

Four components in the Digital Literacy Framework

Components	Skills that learners of all ages will acquire
Find	Gather and evaluate information from, and use digital resources in a safe, secure, responsible and ethical manner
Think	Interpret and analyse data, and solve problems
Apply	Use software and devices to facilitate the use of knowledge and skills in new contexts; keep up with technological developments
Create	Produce content and artefacts, and engage and collaborate with others digitally

At the secondary level

a) <u>Use of personal learning devices (PLDs) to enhance teaching and learning :</u>

> i. <u>Implementation and support for schools:</u> MOE will progressively roll out the use of PLDs in secondary schools starting in June 2020. Schools on the first phase of implementation will introduce PLDs to their Secondary One cohort. All Secondary One students will own their own school-prescribed PLD by 2024, payable using their Edusave Account. This will progressively extend to all secondary students at all levels by 2028. To ensure the success of the roll-out, MOE will support schools in the following areas:
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> - Enhancements to school infrastructure and IT Support;
> - Provision of curriculum-aligned resources for learning with technology;
> - Provision of resources to strengthen digital literacies in students;
> - Provision of Device Management Applications (DMA) which restrict the type of applications and websites accessible by students; and
> - Provision of cyber wellness resources.

ii. Ensuring affordability of devices: Singaporean students can tap on their Edusave Account to buy a school-prescribed PLD, taking advantage of an MOE bulk tender to achieve competitive pricing with economies of scale. MOE is providing a one-off Edusave top-up of $200 in 2020, to all eligible Singaporean students in primary and secondary schools, including those in Special Education (SPED) schools. This is on top of the annual Edusave contribution of $290 for secondary students and $230 for primary students. For students from lower income households, MOE will extend further subsidies so that they do not have to incur any out-of-pocket expenses. This is to ensure that no student is denied the opportunity to benefit from the programme.

iii. Pilot study: MOE conducted a pilot study with eight secondary schools in 2019 to better understand how teaching and learning will be enhanced with the introduction of PLDs in the classroom. The pilot study demonstrated that students were able to deepen and take ownership of their learning through the use of PLDs in tandem with SLS. Teachers also demonstrated confidence in using the PLDs to facilitate their teaching. Additionally, the pilot study found that misuse of devices by students could be mitigated by device management software and classroom routines, such as students placing their tablets face-down on classroom tables when not in use.

The list of schools in the pilot study are:

1. Bendemeer Secondary School
2. Bukit View Secondary School
3. Canberra Secondary School
4. Commonwealth Secondary School
5. Edgefield Secondary School
6. Meridian Secondary School
7. Orchid Park Secondary School
8. Pasir Ris Secondary School

b) More schools to offer O-Level and A-Level Computing:

To create a stronger computing talent pipeline and provide more opportunities for interested students, MOE will expand the number of schools offering O-Level Computing from 22 to likely 30 secondary schools and A-Level Computing from eight to likely 10 junior colleges. The expansion will be rolled out progressively from 2021. The list of schools currently offering O-Level and A-Level Computing is appended below. The expanded list of schools offering O-Level and A-Level Computing will be ready by end-2020.

The list of schools currently offering O-Level and A-Level Computing are:

Schools currently offering O-Level Computing:	1. Admiralty Secondary School 2. Anglo-Chinese School (Barker Road) 3. Boon Lay Secondary School 4. Bukit View Secondary School 5. Chung Cheng High School (Yishun) 6. Clementi Town Secondary School 7. Commonwealth Secondary School 8. Holy Innocents' High School 9. Junyuan Secondary School 10. Jurong West Secondary School 11. Maris Stella High School 12. Montfort Secondary School 13. Ngee Ann Secondary School 14. Pathlight School 15. Peirce Secondary School 16. School of Science and Technology, Singapore 17. Serangoon Secondary School 18. Springfield Secondary School 19. St Patrick's School 20. Temasek Secondary School 21. Xinmin Secondary School 22. Zhonghua Secondary School
Schools currently offering A-Level Computing:	1. Anglo Chinese Junior College 2. Dunman High School 3. Hwa Chong Institution 4. Jurong Pioneer Junior College 5. Nanyang Junior College 6. National Junior College 7. River Valley High School 8. Yishun Innova Junior College

c) Enhance support for the development of Computational Thinking in the secondary Mathematics curriculum:

> The new secondary Mathematics syllabus implemented in 2020 includes examples that encourage students with coding background to write programmes to implement algorithms or solve mathematical problems. Teachers will also be guided in identifying opportunities within the curriculum to enhance development of computational thinking in their students.

d) Build understanding of emerging technologies in our daily lives:

> In line with the revised Lower Secondary Science syllabuses, which will be rolled out in 2021, MOE will provide instructional materials that aim to develop an understanding of emerging technologies in our daily lives, such as the application of Artificial Intelligence and other advancements in technology. These materials will be framed as non-examinable contexts to help students appreciate the applications of science and technology in the real world.
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> Examples of contexts include the use of nanorobots in nanotechnology to deliver drugs into the bloodstream and repair cells, and the use of technology in Smart Homes.

At the tertiary level

> a) By the AY2021 intake, all Autonomous Universities (AUs), polytechnics and Institute of Technical Education (ITE) will enhance existing modules or launch new modules to enhance baseline digital competencies especially in areas such as computational thinking and data competencies (e.g. quantitative reasoning).
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> For example:
> • All ITE students will undergo modules in data analytics.
> • Through the foundational Innovation and Enterprise module, all Nanyang Polytechnic students will develop competencies in computational thinking.
> • All students at the Singapore University of Technology and Design (SUTD) will learn computational thinking and basic programming in the new Computational Thinking for Design module.
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> b) This will also include all AUs, polytechnics and ITE strengthening their cyber wellness curriculum to enhance teaching of digital well-being and ethics by AY2021. Some of these have already been implemented:
> • Through the Personal and Professional Development 1, 2, and 3 modules, all ITE students will learn to apply the appropriate etiquette and ethics in the use of social media.
> • Ngee Ann Polytechnic has developed an e-learning package covering areas such as digital threats, digital responsibilities, and digital protection, which will tie in with the new 'Digital Life' module for all Year 1 students.

- The Singapore University of Social Sciences (SUSS) will be developing a compulsory online course that will include a guide for students to more safely navigate the online space.

c) <u>By the AY2021 intake, students at the polytechnics and ITE will also be taught Artificial Intelligence (AI)-related topics such as AI terminologies, AI approaches, and AI fields.</u> For students training in sectors ripe for AI adoption such as manufacturing, finance, logistics, and cybersecurity, they will be equipped with higher proficiencies in AI competencies. For instance, in addition to the baseline set of AI-related topics, polytechnic and ITE students pursuing cybersecurity courses will also have the opportunity to cover AI-related topics at a more advanced level as required in the sector (e.g., AI tools used in industry for cybersecurity).