

## Computational thinking in the new general curriculum in Vietnam

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On December 26, 2018, the Ministry of Education and Training of Vietnam announced a new general education curriculum (hereafter called 2018 curriculum) in accordance with the circular 32/2018/TT-BGDĐT and will be implemented from the academic year 2020-2021. For the first time, Informatics is officially taught from Primary school (grade 3) to high school (grade 12). (Primary: Grades 3, 4 and 5: 35 periods per year; Junior high school: Grades 6, 7, 8, 9: 35 periods; High school: Grades 10, 11, 12: 70 periods). How is Computation thinking stated in the 2018 curriculum?

The approach to design the new informatic curriculum is: Openness; Information and Technology (IT) oriented career in the fourth industrial revolution; Exploiting the characteristics of STEM-oriented education.

\* The content of the Informatics develops around *3 knowledge circuits* that are mutually related: Information Technology and Communications (ICT), General Digital Data (DL), Computer Science (CS) and is divided into two stages:

- Basic education phase: In elementary school, students mainly learn to use simple software to support learning and use ICT equipment in accordance with the principles of well-being, and initially formed thinking to solve problems. computer support. In Junior high school, students learn to use common software to make products for learning and daily life; practical problem discovery and problem solving with the help of digital technology tools and automation systems; learn how to organize, store, search and search digital data, evaluate and select information
- Career-oriented phase: In addition to the core content of education, each year, students can choose to study a number of subjects depending on their interests, needs and career orientation.

\* *5 competencies*: the new curriculum is designed according to the competency-based approach. Through the Informatic curriculum, students form and develop the key qualities and core competencies set forth in the 2018 curriculum; especially forming and developing information technology competencies, including: Capacity to use and manage automation, tools and systems of ICT; Competence in understanding and behaving in accordance with the ethical, cultural and legal standards in the information society and knowledge economy; Capacity to detect and solve problems with the support of digital technology; Learning capacity, self-study with the support of information and communication technology application systems

\* *7 topics*: the above competencies will be formed through 7 following topics:

A: Computer and knowledge society. B: Computer network and Internet C: Organize, store, search and exchange information. D: Ethics, law and culture in a digital environment. E: Computer applications. F: Solve problems with the help of a computer. G: Career with computer.

\* *Computational thinking*: The core objective of CS is to shape and develop *computational thinking* which is defined as “it uses the abstraction method, how to decompose a task, a large and complex design into smaller, simpler problems so that we can devise algorithms to solve them. Computational thinking dissects relationships to extract characteristics, briefly expresses a problem, or models important aspects of a problem, making it easy to declare and handle.” This is different from the one defined by Wing (2008) “computational thinking is the thought processes involved in formulating a problem and expressing its solution(s) in such a way that a computer – human or machine – can effectively carry it out.”

Due to practical conditions in Vietnam (facilities, equipment, teachers), the new curriculum cannot put CS as the core knowledge circuit as the advanced countries curriculum. The curriculum has only an immediate goal is towards the curriculum standard of developed countries. In addition to continuing to attach importance to the knowledge circuits, ICT and DL skills as the current curriculum, the new point is that CS knowledge circuit is more focused for all students in the basic education stage, especially in career-oriented education.

## References

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