



Republic of the Philippines
House of Representatives
Quezon City



SEVENTEENTH CONGRESS

First Regular Session

House Bill No. **4572**

Introduced by Representative Jose Enrique S. Garcia III

EXPLANATORY NOTE

1 The reliance on modern technology and the software that operates
2 them is growing across every industry and field of commerce. From health
3 care to finance, entertainment to research, the use of computers has become
4 an integral part of development. As the world is evolving into a data driven
5 society, more and more computer programmers are needed. These are the
6 men and women who make ideas a reality by producing the technology and
7 the programs necessary to implement it. Facile knowledge of computers is no
8 longer enough, a deep understanding of technology that allows innovation
9 and creation has now become a must. Unfortunately, we have failed to equip
10 our students for such demands.

11
12 Our current school curriculum neglects to offer our students the needed
13 training to learn about computer science and programming. Under the current
14 K-12 syllabus, there are minimal standards and programs offered regarding
15 computing and programming. Information and computer technology (ICT) is
16 offered as part of the livelihood - vocational track, but the program is
17 insufficient for the global needs. It is high time to revise the subject offerings
18 and offer ICT as a fifth academic track that will prepare students for college
19 education in the said field. Let us give our students the chance to learn, as
20 early as possible, about algorithms, binary codes, Internet transmission
21 methods, looping and other computer science fundamentals – effectively
22 preparing them for global competitiveness.

23
24 Basic HTML design, programing and the like are all part of a computer
25 science course, but beyond simple computer literacy, the core of computer
26 science is developing in students logic and problem solving skills to CREATE
27 technology. More than knowing how to utilize a computer program or make an
28 application, it is teaching students how to build technology.

29
30 Computer science teaches a student how to create software that will
31 translate an idea into reality, but more than that, writing a computer program
32 is about using logic to creatively solve a problem. Computer science is
33 foundational in that it introduces children to a thinking process that utilizes

1 logic, problem solving, and creativity. Students are taught how to be inventors
2 –not just consumers- of technology.

3
4 Computer science is also foundational. It introduces students to
5 computational thinking skills, which embody a more lasting way to think about
6 problems – a solving process that can be applied to any field of study and to
7 any problem. In the same manner that we teach algebra and calculus to our
8 students to develop their logic and problem solving skills, it is equally
9 important that students understand what a “for loop” is and how it is used, and
10 how to design algorithms to solve problems.

11
12 Early exposure to basic computer literacy is necessary because the
13 logic behind computers can only be learned through lifelong training.
14 Computer logic is not something that can be taught and mastered in a few
15 college semesters, but rather, it is acquired only through constant repetition
16 from early in life. If we fail to equip the students with the necessary logic and
17 skills needed for higher-level computer education, then they become stagnant
18 in the ever-changing world of computers and modern technology. If students
19 learn computer concepts too late, they become limited to learning how to use
20 the computers, but never fully grasp the logic behind them – eventually
21 reducing their capacities as soon as the technology changes.

22
23 The future in computers and modern technology is limitless. Multi-
24 media applications, graphic design, computer programing and other computer
25 sciences are just the beginning. Let us equip our youth with the proper tools
26 needed to make them useful and capable citizens.

27
28 Support for this bill is thereby earnestly requested from my colleagues.


REP. JOSE ENRIQUE S. GARCIA III
Second District, Bataan



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**AN ACT PRESCRIBING COMPUTER SCIENCE AS PART OF THE K-12
PROGRAM, APPROPRIATING FUNDS THEREFOR, AND OTHER
PURPOSES**

*Be it enacted by the Senate and the House of Representatives of the
Philippines in Congress assembled:*

1 **SECTION 1. Short Title.** – This Act shall be known as the “Computer
2 Science Act of 2016.”

3 **SECTION 2. Declaration of Principles** – It is the policy of the State to
4 provide an integrated system of education that is complete, adequate, and
5 relevant to the needs of the people and society.

6 Likewise, it is hereby declared the policy of the State to develop a
7 method of education that keeps up-to-date with modern technology,
8 effectively equipping its graduates with the necessary skills for the changing
9 times.

10 Towards this end, the state shall constantly renew and review the
11 existing curricula to ensure the inclusion, learning and utilization of modern
12 technologies, computers, and other similar devices.

13 **SECTION 3. Definition of Terms** – For purposes of this Act, the
14 following terms shall be defined as follows:

- 15 a. “*Computer Science*” shall mean the study of the theory behind the
16 applications, structure and design of a computational system, and
17 the specialization in the theory of computation. It shall include, but
18 not be limited to computational complexity theory, computer
19 graphics, programming language theory, basic HTML design, and
20 other similar computer programming subjects;
21
22 b. “*Computer*” shall mean an electronic device that accepts digitalized
23 data for the purpose of storing and processing information. It shall
24 include all the hardware or physical parts attached to the computer

1 system, and the software used therewith;

- 2
- 3 c. "*Foundational Computer Programming Skills*" shall include, but not
- 4 be limited to computational thinking, algorithms, looping,
- 5 conditionals, variables, functions, abstractions, binary coding,
- 6 sequences, debugging, internet safety, and the like;
- 7
- 8 d. "*DepEd*" shall mean the Department of Education;
- 9
- 10 e. "*DICT*" shall mean the Department of Information and
- 11 Communications Technology;
- 12
- 13 f. "*Information and Communication Technology (ICT)*" shall mean the
- 14 totality of electronic means to access, create, collect, store,
- 15 process, receive, transmit, present and disseminate information, as
- 16 defined in R.A. 10844, otherwise known as "The Department of
- 17 Information and Communications Technology Act of 2015;"
- 18
- 19 g. "*K-12 Curriculum*" shall mean the enhanced basic education
- 20 program as defined in R.A. 10533, otherwise known as the
- 21 "Enhanced Basic Education Act of 2013."

22 **SECTION 4. *Mandatory Computer Science Education*** – The design

23 and details of the K-12 program shall be re-formulated to include computer

24 science, computer literacy, and information and communication technology as

25 part of the basic subjects offered to students at all levels beginning kinder.

26 The revision must ensure that foundational computer programming skills

27 needed for higher level education are developed in children as soon as

28 practicable.

29 The K-12 curriculum shall be further revised to create a Computer

30 Science and Information and Communications Technology (ICT) strand under

31 the Academic Track offered to Senior High School Students. *Provided*, The

32 ICT strand currently under the Technology and Livelihood Education (TLE)

33 and Technical – Vocational – Livelihood (TVL) Tracks shall be repositioned

34 and moved to the Academic Track.

35 **SECTION 5. *Implementing Rules and Regulations/ Role of DepEd and***

36 *DICT* – The DepEd shall, within ninety (90) days from the approval of this Act,

37 formulate the design and details of computer science subjects and track, and

38 issue the implementing rules and regulations necessary for the enforcement

39 of this Act. It shall work in consultation with the necessary government

40 agencies and other stakeholders including, but not limited to, private and

41 public school associations, national student organizations, national teacher

42 organizations, parent-teacher associations and other members of relevant

43 private sectors.

44 The DepEd shall ensure that the use of computers, or the introduction

45 of the necessary computer and modern technology skills, shall be

1 incorporated in the instruction of all subjects at all levels. The appropriate
2 skills to be developed per grade level must be clearly defined and unified with
3 the curriculum offered under the K-12 program.

4 The DepEd shall provide the necessary training for teachers and
5 school administrators for the proper enforcement of this Act. It shall, likewise,
6 provide the schools with the equipment as may be required.

7 The DepEd shall work with the DICT to ensure the computerization of
8 all government-run schools offering the K-12 program.

9 The DICT shall be given five (5) years to provide all the schools
10 nationwide with the necessary computer hardware and software, and to
11 actualize the provisions of this Act.

12 **SECTION 6. *Appropriation*** – An initial amount of One Billion Pesos
13 (PhP 1,000,000,000.00) is hereby appropriated and shall be made available
14 from the funds of the DepEd and the DICT not otherwise appropriated for the
15 immediate implementation of this Act. Thereafter, such sums as may be
16 necessary for the continued enactment of this Act shall be provided in the
17 yearly General Appropriation Act of the national government.

18 **SECTION 7. *Academic Freedom and Institutional Autonomy***. – Nothing
19 in this Act shall be construed as encroaching on the academic freedom of
20 educational institutions. The academic freedom and institutional autonomy,
21 pursuant to Paragraph 2 Section 5 of Article XIV of the Constitution of the
22 Republic of the Philippines shall be guaranteed.

23 **SECTION 8. *Separability Clause*** – If, for any reason, any part or
24 provision of this Act is declared invalid or unconstitutional, the remaining parts
25 or provisions not affected shall remain in full force and effect.

26 **SECTION 9. *Repealing Clause*** – All laws, presidential decrees,
27 executive orders, rules and regulations contrary to or inconsistent with the
28 provisions of this Act are hereby repealed or modified accordingly.

29 **SECTION 10. *Effectivity*** – This Act shall take effect fifteen (15) days
30 upon the approval and publication thereof.

31 *Approved.*