Third – Fifth Grade Computer Science Standards

Introduction to Indiana's Academic Standards for Computer Science
Indiana's Academic Standards for Computer Science allows for students to be prepared in the ever-changing computer science areas providing inquiry-based, hands-on experiences based on two components: Concepts and Practices. These standards are to be implemented in the 2016-2017 school year. The expectation is for students to work through the standards in multi-subject areas and not to be formally assessed by the State of Indiana. As students move through grade levels, they will work with and experience the standards at those grade bands (K-2, 3-5, and 6-8). The standards are based on the five core concepts: Data and Information (DI); Computing Devices and Systems (CD); Programs and Algorithms (PA); Networking and Communication (NC); and Impact and Culture (IC).

Data and Information (DI)
3-5.DI.1 Understand and use the basic steps in algorithmic problem solving (e.g., problem statement and exploration, examination of sample instances, design, implementation, and testing).
3-5.DI.2 Develop a simple understanding of an algorithm (e.g., search, sequence of events, or sorting) using computer-free exercises.
3-5.DI.3 Demonstrate how a string of bits can be used to represent alphanumeric information and how 1's and 0's represent information.
3-5.DI.4 Describe how a simulation can be used to solve a problem.
3-5.DI.5 Understand the connections between computer science and other fields.

Computing Devices and Systems (CD)
3-5.CD.1 Demonstrate proficiency with keyboards and other input and output devices.
3-5.CD.2 Understand the pervasiveness of computers and computing in daily life (e.g., voicemail, downloading videos and audio files, microwave ovens, thermostats, wireless Internet, mobile computing devices, GPS systems).
3-5.CD.3 Apply troubleshooting strategies for identifying simple hardware and software problems that may occur during use.
3-5.CD.4 Recognize that computers model intelligent behavior (as found in robotics, speech and language recognition, and computer animation).

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Programs and Algorithms (PA)
3-5.PA.1 Use technology resources (e.g., calculators, data collection probes, mobile devices, videos, educational software, and web tools) for problem-solving and self-directed learning, and general-purpose productivity tools and peripherals to support personal productivity, remediate skill deficits, facilitate learning, and individual/collaborative writing, communication, and publishing activities.
3-5.PA.2 Use digital tools to gather, manipulate, and modify data for use by a program.
3-5.PA.3 Implement problem solutions using a block-based visual programming language.

Networking and Communication (NC)
3-5.NC.1 Use online resources (e.g., email, online discussions, collaborative web environments) to participate in collaborative problem-solving activities for the purpose of developing solutions or products.
3-5.NC.2 Use productivity technology tools (e.g., word processing, spreadsheet, presentation software) for individual and collaborative writing, communication, and publishing activities.

Impact and Culture (IC)
3-5.IC.1 Discuss basic issues related to responsible use of technology and information, and the consequences of inappropriate use.
3-5.IC.2 Identify the impact of technology (e.g., social networking, cyber bullying, mobile computing and communication, web technologies, cyber security, and virtualization) on personal life and society.
3-5.IC.3 Evaluate the accuracy, relevance, appropriateness, comprehensiveness, and biases that occur in electronic information sources.
3-5.IC.4 Understand ethical issues that relate to computers and networks (e.g., equity of access, security, privacy, copyright, and intellectual property).