INDIANA DEPARTMENT of EDUCATION

2024 INDIANA CONTENT CONNECTORS

COMPUTER SCIENCE

GRADES 3-5

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Indiana Content Connectors Context and Purpose

Introduction

The Indiana Content Connectors for Grades 3-5 Computer Science are the result of a process designed to identify, evaluate, synthesize, and create high-quality learning expectations for Indiana students with significant cognitive disabilities.

The Indiana Department of Education (IDOE) convened stakeholder committees to review proposed revisions to Indiana's Alternative Standards, known as content connectors. The content connectors are designed to measure the knowledge and skills of students with the most significant cognitive disabilities and are assessed with the state's alternate assessment. The content connectors are designed to ensure that all Indiana students in this population are prepared with essential knowledge and skills needed to access employment, enrollment, or enlistment leading to service.

What are the Content Connectors and how should they be used?

The Indiana Content Connectors are designed to help educators, parents, students, and community members understand the necessary content for each grade level, and within each content area domain, to access employment, enrollment, or enlistment leading to service. These content connectors should form the basis for strong core instruction for all students at each grade level and content area. The content connectors identify the minimum academic content or skills to which Indiana students need access in order to be prepared for success after graduation, but they are not an exhaustive list.

While the Indiana Content Connectors establish key expectations for knowledge and skills and should be used as the basis for curriculum, the content connectors by themselves do not constitute a curriculum. It is the responsibility of the local school corporation to select and formally adopt curricular tools, including textbooks and any other supplementary materials, that align with Indiana Content Connectors. Additionally, corporation and school leaders should consider the appropriate instructional sequence of the content connectors as well as the length of time needed to teach each one. Every content connector has a unique place in the continuum of learning, but each content connector will not require the same amount of time and attention. A deep understanding of the vertical articulation of the standards will enable educators to make the best instructional decisions. These content connectors must also be complemented by robust, evidence-based instructional practices to support overall student development. By utilizing strategic and intentional instructional practices, other areas such as STEM and employability skills can be integrated with the content connectors.

Acknowledgments

IDOE appreciates the time, dedication, and expertise offered by Indiana's K-12 general and special educators, higher education professors, representatives from business and industry, families, and other stakeholders who contributed to the development of the Indiana Content Connectors. We wish to specially acknowledge the committee members, as well as participants in the public comment period, who dedicated many hours to the review and evaluation of these content connectors designed to prepare Indiana students for success after graduation.

Grades 3-5 Computer Science

Standards and content connectors identified as essential for mastery by the end of the grade level are indicated with gray shading and an "E." Empty boxes are placeholders to preserve alignment of vertically-articulated standards.

Indiana Academic Standards	Content Connectors
Data & Information	
3-5.DI.1: Decompose problems and subproblems into parts as a means to solving complex problems. (E)	**3-5.DI.1a:** Decompose a familiar problem into steps to reach a solution or solve a problem. (E)
3-5.DI.2: Organize and present collected data visually to highlight relationships and support a claim.	**3-5.DI.2a:** Organize provided data into a visual representation (e.g., pictograph, chart, table, slide) and make a claim that is supported by the data.
3-5.DI.3: Demonstrate how variables can represent data and are used to store and modify information.	**3-5.DI.3a:** Demonstrate what variables are and how they store information.
3-5.DI.4: Describe that data can be represented in different forms understandable by people, including words, symbols, and digital displays of color.	**3-5.DI.4a:** Describe that data can be represented in different forms understandable by people, including words, symbols, and digital displays of color.
3-5.DI.5: Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea. (E)	**3-5.DI.5a:** Observe data presented (e.g., chart, pictograph) to identify a pattern or communicate an idea. (E)
Computing Devices & Systems	
3-5.CD.1: Model how computer hardware and software work together to accomplish tasks.	**3-5.CD.1a:** Identify an example of computer hardware and an example of computer software.
3-5.CD.2: Determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies. (E)	**3-5.CD.2a:** Use simple troubleshooting strategies to solve a hardware or software problem (e.g., The computer screen is black because the battery isn't charged. The screen is black because my Chromebook isn't plugged in. The computer is working slowly because there are too many things open at once). (E)

3-5.CD.3: Describe how internal and external parts of computing devices function to form a system.	**3-5.CD.3a:** Identify external parts of a computer system (e.g., mouse, keyboard, monitor, case).
3-5.CD.4: Describe what distinguishes humans from machines, focusing on human intelligence versus machine intelligence.	**3-5.CD.4a:** Identify an action that is specific to humans (e.g., care, breathe, smile) or identify an action that people rely on a computer to do (e.g., solve a complex math problem, get data to answer a question).
Programs & Algorithms	
3-5.PA.1: Collaborate with peers to implement problem-solving steps to create a variety of programming solutions. (E)	**3-5.PA.1a:** Work with one or more people to complete provided steps to solve a problem or complete a task. (E)
3-5.PA.2: Design programs that incorporate sequences, events, loops, and conditionals. (E)	**3-5.PA.2a:** Identify and incorporate sequences, loops, events, and conditionals in computer programs.
3-5.PA.3: Test and debug (i.e., identify and fix errors) a program or algorithm to ensure it runs as intended.	**3-5.PA.3a:** Fix an error in a list of steps that explains a familiar process or solution to a problem. (E)
3-5.PA.4: Observe intellectual property rights and give appropriate attribution when creating or remixing programs. (E)	**3-5.PA.4a:** Attribute credit to others when creating and remixing programs by including code comments within the lines of code. (E)
3-5.PA.5: Describe choices made during program development using code comments, presentations, and demonstrations. (E)	**3-5.PA.5a:** Explain the function of a piece of code and how changing the code changes the function or outcome. (E)
Networking & the Internet	
3-5.NI.1: Discuss real-world cybersecurity problems and how personal information can be protected. (E)	**3-5.NI.1a:** Identify a way to protect people's personal information on computer systems. (E)
3-5.NI.2: Model how information is broken down into smaller pieces, transmitted as packets through multiple devices over networks and the internet, and reassembled at the destination.	**3-5.NI.2a:** Identify parts of a model that show how information moves across networks or the internet.

Impact & Culture	
3-5.IC.1: Describe the positive and negative impacts of technology on one's personal life, society, and our culture. (E)	**3-5.IC.1a:** Identify a positive or negative impact technology has had on how people communicate or live. (E)
3-5.IC.2: Seek diverse perspectives for the purpose of improving computational artifacts.	**3-5.IC.2a:** Implement improvements to a computational artifact (e.g., digital animations, apps, webpages) based on provided feedback or suggestions from others.
3-5.IC.3: Critique computing technologies that have changed the world. Analyze how those technologies influence and/or are influenced by cultural practices and societal biases.	**3-5.IC.3a:** Explain how computing technologies have changed how people communicate or live (e.g., smartphones, computers, email, texting).