

Information and Communication Technology/Coding 4–6 Integration

Information and Communication Technology/Coding Grade 4		
Strategies and Skills (to Support Indicators)	Outcomes	Performance/Assessment Indicators
<ul style="list-style-type: none"> use appropriate and safe behaviors online demonstrate good practices in personal information security awareness of health and safety issues when using information technology 	<p>Outcome 1: Digital Citizenship Students will understand and demonstrate behaviors which ensure their own and others health, safety and privacy.</p>	<ul style="list-style-type: none"> Create and maintain a secure online, account for classroom use. (CZ, PCD, TF) Demonstrate correct ergonomics. (PCD, TF) Create and follow a class plan around screen time, privacy expectations, and digital footprint awareness. (CZ, CT, CI, Com, PCD, TF) Show an awareness of the strategies for the safe and efficient use of computers. (PCD, TF)
<ul style="list-style-type: none"> cultural understanding and global awareness advocate and practice safe, legal, and responsible use of information and technology 	<p>Outcome 2: Digital Citizenship Students will follow best practices of active digital citizenship as they interact and contribute in the digital - connected global world.</p>	<ul style="list-style-type: none"> With teacher direction follow <i>Public Network Access and Use Policy</i>. (CZ, CT, Com, PCD, TF) Follow classroom guidelines regarding the acceptable use of digital tools. (CZ, CT, Com, PCD, TF) Discuss and follow proper ethical behaviors while using digitals tools. (CZ, CT, Com, PCD, TF) With teacher support, follow legal and ethical behaviors when using information and digital tools. (CZ, CT, Com, PCD, TF) Understand the consequences of misuse. (CZ, CT, Com, PCD, TF)
<ul style="list-style-type: none"> interact with others locally and globally using a range of technologies communication etiquette communicate information and ideas effectively using a variety of media and formats communication in various digital environments use a range of digital tools that creatively enhances presentation, 	<p>Outcome 3: Communication Students will use digital tools to communicate and work collaboratively, including at a distance, to support individual learning and to contribute to the learning of others.</p>	<ul style="list-style-type: none"> With assistance, use a variety of media and formats to communicate ideas and information using teacher selected digital tools. (CZ, CT, CI, Com, PCD, TF) With assistance, communicate and collaborate electronically with others inside and outside the classroom in teacher selected digital environments. (CZ, CT, CI, Com, PCD, TF) Use appropriate communication etiquette. (CZ, CT, Com, PCD, TF) Develop cultural understanding and global awareness by engaging with learners of additional cultures. (ISTE) (CZ, CT, CI, Com, PCD, TF)

Citizenship (CZ) Communication (Com) Creativity and Innovation (CI) Critical Thinking (CT) Personal Career Development (PCD) Technological Fluency (TF)

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Strategies and Skills (to Support Indicators)	Outcomes	Performance/Assessment Indicators
<p>performance or communication of information and ideas</p>		
<ul style="list-style-type: none"> • use digital tools in the inquiry process to plan, create and publish their work • select and use grade appropriate tools to solve problems • work co-operatively when using digital tools • understand and demonstrate how to choose the most effective tool for the intended audience 	<p>Outcomes 4: Productivity and Innovation Students will use digital tools to plan, create, and publish their work both individually and collaboratively.</p>	<ul style="list-style-type: none"> • Accomplish curriculum-based tasks by using teacher selected digital tools. (CZ, CT, CI, Com, PCD, TF) • With assistance, collaboratively accomplish curriculum-based tasks by using teacher selected and using digital tools. (CZ, CT, CI, Com, PCD, TF) • Use a range of media. (CZ, CT, Com, PCD, TF) • Apply existing knowledge to generate new ideas, products, or processes. (CZ, CT, CI, Com, PCD, TF)
<ul style="list-style-type: none"> • use search strategies to access electronic information • critically evaluate, scan and select relevant information from electronic sources • record and manipulate information electronically • use content specific electronic sources to support and enhance research • use appropriate digital tools and resources to accomplish research tasks • understand and demonstrate critical literacy skills across all mediums • work collaboratively 	<p>Outcome 5: Research, Problem Solving and Decision Making Students will use digital tools to gather, record, share and interpret information and data to support learning.</p>	<ul style="list-style-type: none"> • With assistance, use Internet search engines and other online search resources. (CT, Com, TF) • Use menus, icons and other tools to locate relevant information from familiar sources. (CT, Com, TF) • Investigate various media formats and how they are organized. (CT, CI, Com, TF) • Use prepared databases and spreadsheets to enter and organize data. (CT, CI, Com, TF) • Retrieve data from a variety of information technology sources. (CT, CI, Com, TF) • Use digital tools to organize information from different sources (CT, CI, Com, TF) • Demonstrate the ability to draw simple conclusions from information retrieved from electronic and other sources. (CT, CI, Com, TF)

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Strategies and Skills (to Support Indicators)	Outcomes	Performance/Assessment Indicators
		<ul style="list-style-type: none"> With teacher assistance use digital tools to extract and gather data. (CT, CI, Com, TF)
	<p>Outcome 6: Research, Problem Solving and Decision Making Students will demonstrate problem solving skills using digital tools both individually and collaboratively.</p>	<ul style="list-style-type: none"> With assistance, use teacher selected digital tools to support problem solving individually and collaboratively. (CZ, CT, CI, Com, PCD, TF)
<ul style="list-style-type: none"> independently operate computer equipment and associated peripherals efficiently use programs and systems use appropriate terminology while working with digital tools troubleshoot systems and applications take care of digital tools 	<p>Outcome 7: Technology Operations and Concepts Students will demonstrate an understanding of technology operations and concepts while safely and responsibly using digital tools and equipment.</p>	<ul style="list-style-type: none"> With assistance, use technology systems. (CZ, CT, CI, Com, PCD, TF) With teacher support, troubleshoot systems and applications. (CT, Com, PCD, TF) With assistance, integrate the use of peripherals into projects and presentations (CZ, CT, CI, Com, PCD, TF)
<p>Purpose</p> <ul style="list-style-type: none"> Control/robotics - <i>writing programs to control and influence external devices. Using external input devices to control output. E.g. robots , Makey Makey- Teach students that programming applies to more than just games and computers</i> Gaming Real world situations 	<p>Outcome 8: Coding Students will understand and apply the basic concepts of computer science, including algorithms, abstraction, and computational thinking.</p>	<ul style="list-style-type: none"> Organize a sequence of events into a series of steps (CT, CI, Com, TF) Predict the behavior or outcome of a simple coding sequence. (CT, CI, Com, TF) Recognize and suggest solutions to simple errors in a sequence of code or instructions. (CT, CI, Com, TF) With support use “if” statements and loops to construct a set of statements to be acted out to accomplish a simple task. (CT, CI, Com, TF) Recognize that computers are machines and are limited to the conditions that are created for them. (CT, CI, Com, TF)

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Information and Communication Technology/Coding Grade 4		
Strategies and Skills (to Support Indicators)	Outcomes	Performance/Assessment Indicators
Problem solving <ul style="list-style-type: none"> • Pattern Recognition • Sequencing • Debugging • simplification/efficiency Communication <ul style="list-style-type: none"> • Abstraction Concept <ul style="list-style-type: none"> • Conditions (If ... Then ...) • Loops • Variables • Languages • Understand limitations of computers. 		

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Information and Communication Technology/Coding Grade 5		
Strategies and Skills (to Support Indicators)	Outcomes	Assessment/Performance Indicators
<ul style="list-style-type: none"> use appropriate and safe behaviors online demonstrate good practices in personal information security awareness of health and safety issues when using information technology 	<p>Outcome 1: Digital Citizenship Students will understand and demonstrate behaviors which ensure their own and others health, safety and privacy.</p>	<ul style="list-style-type: none"> Create and maintain a secure online account for classroom use. (CZ, PCD, TF) Demonstrate correct ergonomics. (PCD, TF) (e.g., posture, time on computer, proximity to screen, adequate lighting) Create and follow a personal plan around screen time, privacy expectations, and digital footprint awareness. (CZ, CT, CI, Com, PCD, TF) With teacher support use the strategies for the safe and efficient use of computers. (PCD, TF)
<ul style="list-style-type: none"> cultural understanding and global awareness advocate and practice safe, legal, and responsible use of information and technology 	<p>Outcome 2: Digital Citizenship Students will follow best practices of active digital citizenship as they interact and contribute in the digital - connected global world.</p>	<ul style="list-style-type: none"> With teacher assistance follow <i>Public Network Access and Use Policy</i>. (CZ, CT, Com, PCD, TF) Follow classroom guidelines regarding the acceptable use of digital tools. (CZ, CT, Com, PCD, TF) Exhibit legal and ethical behaviors when using information and ICT. (CZ, CT,, Com, PCD, TF) Understand the consequences of misuse. (CZ, CT, Com, PCD, TF)
<ul style="list-style-type: none"> interact with others locally and globally using a range of technologies communication etiquette communicate information and ideas effectively using a variety of media and formats communication in various digital environments use a range of digital tools that creatively enhances presentation, performance or communication of information and ideas 	<p>Outcome 3: Communication Students will use digital tools to communicate and work collaboratively, including at a distance, to support individual learning and to contribute to the learning of others.</p>	<ul style="list-style-type: none"> With teacher selected digital tools and support, communicate ideas and information using a variety of media and formats. (CZ, CT, CI, Com, PCD, TF) Independently communicate and collaborate electronically with others inside and outside the classroom in teacher selected digital environments. (CZ, CT, CI, Com, PCD, TF) Use appropriate communication etiquette. (CZ, CT, Com, PCD, TF) Develop cultural understanding and global awareness by engaging with learners of additional cultures. (CZ, CT, CI, Com, PCD, TF, TE)

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Information and Communication Technology/Coding Grade 5		
Strategies and Skills (to Support Indicators)	Outcomes	Assessment/Performance Indicators
<ul style="list-style-type: none"> • use digital tools in the inquiry process to plan, create and publish their work • select and use grade appropriate tools to solve problems • work co-operatively when using digital tools • understand and demonstrate how to choose the most effective tool for the intended audience 	<p>Outcome 4: Productivity and Innovation Students will use digital tools to plan, create, and publish their work both individually and collaboratively.</p>	<ul style="list-style-type: none"> • Individually and collaboratively accomplish curriculum-based tasks with support by selecting and using digital tools. (CZ, CT, CI, Com, PCD, TF) • Use a range of media and digital tools. (CZ, CT, Com, PCD, TF) • Apply existing knowledge to generate new ideas, products, or processes. (CZ, CT, CI, Com, PCD, TF)
<ul style="list-style-type: none"> • use digital tools in the inquiry process to plan, create and publish their work • select and use grade appropriate tools to solve problems • work co-operatively when using digital tools • understand and demonstrate how to choose the most effective tool for the intended audience 	<p>Outcome 5: Research, Problem Solving and Decision Making Students will use digital tools to gather, record, share and interpret information and data to support learning.</p>	<ul style="list-style-type: none"> • Suggest words required to effectively search electronic sources while using internet search engines. (CT, Com, TF) • Identify and distinguish points of view expressed in electronic sources on a particular topic. (CZ, CT, Com, TF) • Analyze electronic sources for accuracy or relevance to the purpose (CT, Com, TF) • Create and use simple organizers and outlines (CT, CI, Com, TF)
<ul style="list-style-type: none"> • use search strategies to access electronic information • critically evaluate, scan and select relevant information from electronic sources 	<p>Outcome 6: Research, Problem Solving and Decision Making Students will demonstrate problem solving skills using digital tools both individually and collaboratively.</p>	<ul style="list-style-type: none"> • Use teacher selected digital tools to support problem solving individually and collaboratively. (CZ, CT, CI, Com, PCD, TF)

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Strategies and Skills (to Support Indicators)	Outcomes	Assessment/Performance Indicators
<ul style="list-style-type: none"> record and manipulate information electronically use content specific electronic sources to support and enhance research use appropriate digital tools and resources to accomplish research tasks understand and demonstrate critical literacy skills across all mediums work collaboratively 		
<ul style="list-style-type: none"> independently operate computer equipment and associated peripherals efficiently use programs and systems use appropriate terminology while working with digital tools troubleshoot systems and applications take care of digital tools 	<p>Outcome 7: Technology Operations and Concepts Students will demonstrate an understanding of technology operations and concepts while safely and responsibly using digital tools and equipment.</p>	<ul style="list-style-type: none"> Understand and use technology systems. (CZ, CT, CI, Com, PCD, TF) With growing independence, troubleshoot systems and applications. (CT, Com, PCD, TF) With growing independence integrate the use of peripherals into projects and presentations. (CZ, CT, CI, Com, PCD, TF)
<p>Purpose</p> <ul style="list-style-type: none"> Control/robotics - <i>writing programs to control and influence external devices. Using external input devices to control output. E.g. robots , Makey Makey - Teach students that programming applies to more than just games and computers</i> Gaming Real world situations 	<p>Outcome 8: Coding Students will understand and apply the basic concepts of computer science, including algorithms, abstraction, and computational thinking.</p>	<ul style="list-style-type: none"> With support, analyze an event or task and identify the steps required to complete it. (CT, CI, Com, TF) Predict the behavior or outcome of a coding sequence. (CT, CI, Com, TF) Recognize and offer solutions to multiple errors in their own code and that of others. (CT, CI, Com, TF) Use “and”, “or” statements and “for” loops to construct a set of statements to be acted out to accomplish a task. (CSTA K-12) (CZ, CT, CI, Com, PCD, TF) With support include variables in a sequence of their own code (CT, CI, Com, TF)

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Strategies and Skills (to Support Indicators)	Outcomes	Assessment/Performance Indicators
Problem solving <ul style="list-style-type: none"> • Pattern Recognition • Sequencing • Debugging • simplification/efficiency Communication <ul style="list-style-type: none"> • Abstraction Concept <ul style="list-style-type: none"> • Conditions (If ... Then ...) • Loops • Variables • Languages • Understand limitations of computers. 		<ul style="list-style-type: none"> • Recognize that programming occurs in a variety of coding languages and that each language has different iterations that achieve the same result.(CT, CI, Com, TF)

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Information and Communication Technology/Coding Grade 6		
Strategies and Skills (to Support Indicators)	Outcomes	Assessment/Performance Indicators
<ul style="list-style-type: none"> use appropriate and safe behaviors online demonstrate good practices in personal information security awareness of health and safety issues when using information technology 	<p>Outcome 1: Digital Citizenship Students will understand and demonstrate behaviors which ensure their own and others health, safety and privacy.</p>	<ul style="list-style-type: none"> Create and maintain a secure account for classroom use. (CZ, PCD, TF) Demonstrate correct ergonomics. (PCD, TF) Create and follow a personal plan around screen time, social media use, privacy expectations, and digital footprint awareness. (CZ, CT, CI, Com, PCD, TF) Model strategies for the safe and efficient use of computers. (PCD, TF)
<ul style="list-style-type: none"> cultural understanding and global awareness advocate and practice safe, legal, and responsible use of information and technology 	<p>Outcome 2: Digital Citizenship Students will follow best practices of active digital citizenship as they interact and contribute in the digital - connected global world.</p>	<ul style="list-style-type: none"> Follow <i>Public Network Access and Use Policy</i>. (CZ, CT, Com, PCD, TF) Follow classroom guidelines regarding the acceptable use of digital tools. (CZ, CT, Com, PCD, TF) Understand the various laws and policies as they pertain to the student's use of digital tools. (CZ, CT, Com, PCD, TF) Demonstrate ethical and legal use of information. (CZ, CT, Com, PCD, TF) Understand the consequences of misuse. (CZ, CT, Com, PCD, TF)
<ul style="list-style-type: none"> interact with others locally and globally using a range of technologies communication etiquette communicate information and ideas effectively using a variety of media and formats communication in various digital environments use a range of digital tools that creatively enhances presentation, 	<p>Outcome 3: Communication Students will use digital tools to communicate and work collaboratively, including at a distance, to support individual learning and to contribute to the learning of others.</p>	<ul style="list-style-type: none"> Independently communicate ideas and information using teacher or student selected digital tools. (CZ, CT, CI, Com, PCD, TF) Communicate information and ideas effectively to multiple audiences using a variety of media and formats. (CZ, CT, CI, Com, PCD, TF) Independently communicate and collaborate electronically with others inside and outside the classroom. (CZ, CT, CI, Com, PCD, TF) Use appropriately communication etiquette. (CZ, CT, Com, PCD, TF) Develop cultural understanding and global awareness by engaging with learners of other cultures. (CZ, CT, CI, Com, PCD, TF, TE)

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Information and Communication Technology/Coding Grade 6		
Strategies and Skills (to Support Indicators)	Outcomes	Assessment/Performance Indicators
<p>performance or communication of information and ideas</p>		
<ul style="list-style-type: none"> • use digital tools in the inquiry process to plan, create and publish their work • select and use grade appropriate tools to solve problems • work co-operatively when using digital tools • understand and demonstrate how to choose the most effective tool for the intended audience 	<p>Outcome 4: Productivity and Innovation Students will use digital tools to plan, create, and publish their work both individually and collaboratively.</p>	<ul style="list-style-type: none"> • Accomplish curriculum-based tasks by independently selecting and using digital tools individually and collaboratively. (CZ, CT, CI, Com, PCD, TF) • Use a range of media and digital tools. (CZ, CT, CI, Com, PCD, TF) • Apply existing knowledge to generate new ideas, products, or processes. (CZ, CT, CI, Com, PCD, TF)
<ul style="list-style-type: none"> • use digital tools in the inquiry process to plan, create and publish their work • select and use grade appropriate tools to solve problems • work co-operatively when using digital tools 	<p>Outcome 5: Research, Problem Solving and Decision Making Students will use digital tools to gather, record, share and interpret information and data to support learning.</p>	<ul style="list-style-type: none"> • Efficiently use Internet search engines and other online search resources. (CT, Com, TF) (Booleans) • Select and use a variety of electronic resources to build a knowledge base. (CT, CI, Com, TF)

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<ul style="list-style-type: none"> understand and demonstrate how to choose the most effective tool for the intended audience 		<ul style="list-style-type: none"> Make decisions, and draw conclusions to create something new. (CT, CI, Com, TF) Compare formats of print, electronic and multimedia reference materials to facilitate selection of resources and information. (CT, CI, Com, TF) Create visual organizers to sequence, classify and analyze information. (CT, CI, Com, TF) Use digital tools to extract, gather and collate data. (CT, CI, Com, TF)
<ul style="list-style-type: none"> use search strategies to access electronic information critically evaluate, scan and select relevant information from electronic sources record and manipulate information electronically use content specific electronic sources to support and enhance research use appropriate digital tools and resources to accomplish research tasks understand and demonstrate critical literacy skills across all mediums work collaboratively 	<p>Outcome 6: Research, Problem Solving and Decision Making Students will demonstrate problem solving skills using digital tools both individually and collaboratively.</p>	<ul style="list-style-type: none"> Independently select and use digital tools to support problem solving individually and collaboratively. (CZ, CT, CI, Com, PCD, TF)
<ul style="list-style-type: none"> independently operate computer equipment and associated peripherals efficiently use programs and systems 	<p>Outcome 7: Technology Operations and Concepts</p>	<ul style="list-style-type: none"> Understand and use technology systems. (CZ, CT, CI, Com, PCD, TF) Troubleshoot systems and applications. (CT, Com, PCD, TF)

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Strategies and Skills (to Support Indicators)	Outcomes	Assessment/Performance Indicators
<ul style="list-style-type: none"> use appropriate terminology while working with digital tools troubleshoot systems and applications take care of digital tools 	<p>Students will demonstrate an understanding of technology operations and concepts while safely and responsibly using digital tools and equipment.</p>	<ul style="list-style-type: none"> Independently integrate the use of peripherals into projects and presentations. (CZ, CT, CI, Com, PCD, TF)
<p>Purpose</p> <ul style="list-style-type: none"> Control/robotics - <i>writing programs to control and influence external devices. Using external input devices to control output. E.g. robots , Makey Makey- Teach students that programming applies to more than just games and computers</i> Gaming Real world situations <p>Problem solving</p> <ul style="list-style-type: none"> Pattern Recognition Sequencing Debugging simplification/efficiency <p>Communication</p> <ul style="list-style-type: none"> Abstraction <p>Concept</p> <ul style="list-style-type: none"> Conditions (If ... Then ...) Loops Variables 	<p>Outcome 8: Coding</p> <p>Students will understand and apply the basic concepts of computer science, including algorithms, abstraction, and computational thinking.</p>	<ul style="list-style-type: none"> Identify an event, task or challenge and create the code required to complete it. (CT, CI, Com, TF) Use prediction to analyze their code. (CT, CI, Com, TF) Use a variety of techniques to fix, improve and analyze their own code. (CT, CI, Com, TF) Use loops, with a variable as the condition, to construct a set of statements to be acted out to accomplish a task. (CT, CI, Com, TF) Use variables to enhance a sequence of their own code. (CT, CI, Com, TF) Recognize that programs have impacts, bias and consequences, not all of which can be foreseen. (CT, CI, Com, TF)

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Strategies and Skills (to Support Indicators)	Outcomes	Assessment/Performance Indicators
<ul style="list-style-type: none">• Languages• Understand limitations of computers.		

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