Nevada Kindergarten Computer Science Report Card – LEGO® Education Solutions

Note: This is an example. A full K-5 alignment offering is available. Contact your Account Manager, Danna Hollander - Danna.Hollander@LEGO.com

Concept: Algorithms and Programming		
Indicator	**Meeting the Standard** ***Students will...***	**Aligned LEGO® Solution**
K.AP.A.1	Model daily processes by creating and following sets of step-by-step instructions (algorithms) to complete tasks.	**Coding Express – First Trip** 
K.AP.PD.1	Identify and fix (debug) errors in a sequence of instructions (algorithms) that includes loops.	**Coding Express – O-Shaped Track Looping** 

Concept: Computing Systems		
Indicator	**Meeting the Standard** ***Students will...***	**Using the LEGO Education Materials**
K.CS.HS.1	Use appropriate terminology in identifying and describing the function of common physical components of computing systems (hardware). For example: monitor, keyboard, mouse, earbuds, headphones, printer.	The Coding Express app may be run on a computing device and can be used to complement any lesson that is supporting students to navigate the physical components of computing. 
K.AP.PD.1	Recognize some computing devices (e.g., computer, smartphone) can perform a variety of tasks and some computing devices are specialized (e.g., navigation system, game controller).	

Concept: Data and Analysis		
Indicator	**Meeting the Standard** ***Students will...***	**Aligned LEGO Solution**
K.DA.S.1	Recognize that data can be collected and stored on different computing devices over time.	**Coding Express – Caterpillar** **Coding Express – Animal Concert** 

Concept: Impacts of Computing		
Indicator	**Meeting the Standard** ***Students will...***	**Aligned LEGO Solution**
K.IC.C.1	Understand how computing devices have changed people's lives.	**Coding Express – Train Sound**  **Coding Express – Y-Shaped Track** 
K.IC.SI.1	Exhibit good digital citizenship using technology safely, responsibly, and ethically.	LEGO Education lessons, including those of Coding Express, include components of using technology safely, responsibly, and collaboratively with peers. Links to Digital Safety Activities and Games 

Concept: Networks and the Internet		
Indicator	**Meeting the Standard** ***Students will...***	**Aligned LEGO Solution**
K.NI.C.1	Explain that a password helps protect the privacy of information.	**Loose Bricks Password Activity** **Guiding Questions:** • What type of information do we keep private? Why? • Why is it important to keep this information private? • What could happen if we don't protect this information? **Description:** Working in pairs, Student A select three different colored LEGO® bricks. Without their partner seeing, Student A selects one brick for their password, then hides the bricks. Student B tries to guess Student A's password by naming the color of the selected brick. Students repeat activity to try and create more complex passwords by increasing the length of the password and the criteria needed (i.e., color, number of studs, function, DUPLO or system) **Conclusion:** Have students explain what a password is and why we use one. Have them share with a partner.

Nevada 1st Grade Computer Science Report Card – LEGO Education Solutions

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Concept: Algorithms and Programming			
Indicator	**Standard**	**Meeting the Standard** ***Students will...***	**LEGO Solutions**
1.AP.PD.1	Describe the iterative process of program development (including terminology, steps taken, and the logic of choices).	Describe a program's sequence of events, goals, and expected outcomes including: --applicable necessary terms --sequence of events/steps taken --logic to support choices made	SPIKE Essential - Cave Car 
1.AP.V.1	Model the way programs store and manipulate data by using numbers or other symbols to represent information.	Modify an existing solution (using data and numbers) to represent how to solve a variety of problems.	SPIKE™ Essential – Spinning Ferris Wheel  Other supporting lessons: SPIKE Essential - The Perfect Swing

Concept: Computing Systems			
Indicator	**Standard**	**Meeting the Standard** ***Students will...***	**LEGO Solutions**
1.CS.D.1	Select and operate appropriate device and software to perform a variety of tasks and recognize that users have different needs and preferences for the technology they use.	Select and operate a device to perform a variety of different tasks. Recognize and identify the needs/preferences of different users to support the technology they will choose to support those users. Modify a solution, considering user preferences, to perform a specific goal or outcome.	SPIKE™ Essential - Twirling Teacups  Other supporting lessons: SPIKE™ Essential - Spinning Ferris Wheel

Concept: Data and Analysis			
Indicator	**Standard**	**Meeting the Standard** ***Students will...***	**LEGO Solutions**
1.DA.S.1	Recognize that a variety of data (e.g., music, video, images, text) can be stored in and retrieved from a computing device.	Recognize and identify that data that can be stored in and retrieved from a computing device such as music, video, images, text, icon/word code.	SPIKE™ Essential - Spinning Ferris Wheel SPIKE™ Essential - Animal Alarm 

Concept: Impacts of Computing			
Indicator	**Standard**	**Meeting the Standard** ***Students will...***	**LEGO Solutions**
1.IC.SI.1	Work respectfully and responsibly with others online.	Respectfully and responsibly work and collaborate with others online.	All SPIKE™ Essential solutions include objectives for safe and respective collaboration with peers when working both on and offline.

Concept: Networks and the Internet			
Indicator	**Standard**	**Meeting the Standard** ***Students will...***	**LEGO Solutions**

1.NI.C.1	Explain why we keep personal information (e.g., name, location, phone number, home address) private.	Explore and explain why it is important to keep personal information private.
		
		Additional Skills:
		• Communication
		• Critical Thinking
		• Computer Science:
		  ○ Networks and Security
		  ○ Digital Citizenship
		  ○ Communication
			LEGO Education Unplugged Activity
			
			Guiding Questions:
			• What type of information do we keep private? Why?
			• Why is it important to keep this information private?
			• What could happen if we don't protect this information?
			
			Description: Working in pairs, Student A select three different colored LEGO® bricks. Without their partner seeing, Student A selects one brick for their password, then hides all of the bricks. Student B tries to guess Student A's password by naming the color of the selected brick. Students repeat activity to try and create more complex passwords by increasing the length of the password and the criteria needed (i.e., color, number of studs, function, DUPLO or system)
			
			Guiding questions:
			• How difficult was it to guess a short password?
			• What additional criteria did you add to make your password difficult to guess?
			
			Conclusion: Have students write a reflection about why we keep personal information private and why and what could happen if we don't. Have them share with a partner.

Nevada 2nd Grade Computer Science Report Card – LEGO® Education Solutions

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Concept: Algorithms and Programming			
Indicator	**Meeting the Standard** ***Students will...***	**LEGO Solution**	**Using the LEGO Education Materials**
2.AP.C.1	Develop programs with sequences and loops, to express ideas or address a problem.	**LEGO® Education SPIKE™ Essential – Underwater Quest** 	Choose and complete the Underwater Quest lesson. Develop and record their plan and describe a program's sequence of events, goals, and expected outcomes.
2.AP.M.1	Break down (decompose) the steps needed to solve a problem into a precise sequence of instructions.		
2.AP.PD.1	Develop plans that describe a program's sequence of events, goals, and expected outcomes.		
2.AP.PD.2	Give attribution (credit) when using the ideas and creations of others while developing programs.		Choose and complete the Underwater Quest lesson. Have students write a reflection about giving credit to the ideas and creations of others while developing a program for the lesson.

Concept: Computing Systems		
Indicator	**Meeting the Standard** ***Students will...***	**Aligned LEGO Solution**
2.CS.T.1	Describe basic hardware and software problems using accurate terminology.	The SPIKE™ Essential app and the lessons associated may be run on a computing device and can be used to complement any lesson that is supporting students to navigate the physical components of computing.

Concept: Data and Analysis		
Indicator	**Meeting the Standard** ***Students will...***	**Aligned LEGO Solution**
2.DA.S.1	Store, copy, search, retrieve, modify, and delete information using a computing device and define the information stored as data.	The SPIKE™ Essential app and the lessons associated allow coding information to be stored, copied, searched, retrieved, modified, and deleted using a computing device. 

Concept: Impacts of Coding			
Indicator	**Meeting the Standard** ***Students will...***	**LEGO Solution**	**Using the LEGO Education Materials**
2.IC.C.1	Compare how people live and work before and after the implementation or adoption of new computing technology.	**SPIKE™ Essential – Cave Car**  **SPIKE™ Essential – Animal Alarm** 	Choose and complete the Cave Car or Animal Alarm lessons. Compare how people explored caves or protected themselves from animals before and after computing technology such as a "cave car" or an "animal alarm" was adopted.
2.IC.SLE.1	Identify safe and unsafe examples of online communications.	Build and Talk: LEGO activities about Digital Safety Links to Digital Safety Activities and Games	Complete an activity on Digital Safety. Identify safe and unsafe examples of online communications.

Concept: Networks and the Internet		
Indicator	**Meeting the Standard** ***Students will...***	**Aligned LEGO Solution**
2.NI.C.1	Explain what passwords are and why we use them; use strong passwords to protect devices and information from unauthorized access.	**Loose Bricks Password Activity** **Guiding Questions:** • What type of information do we keep private? Why? • Why is it important to keep this information private? • What could happen if we don't protect this information? **Description:** Working in pairs, Student A selects three different colored LEGO bricks. Without their partner seeing, Student A selects one brick for their password, then hides all the bricks. Student B tries to guess Student A's password by naming the color of the selected brick. Students repeat activity to try and create more complex passwords by increasing the length of the password and the criteria needed (i.e., color, number of studs, function, DUPLO or system) **Guiding Questions:** • How difficult was it to guess a short password? • What additional criteria did you add to make your password difficult to guess? **Conclusion:** Have students write a reflection about why it is important to create strong passwords to protect devices and information from unauthorized access.

Nevada 3rd Grade Computer Science Report Card – LEGO® Education Solutions

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Concept: Algorithms and Programming		
Indicator	**Meeting the Standard** ***Students will...***	**Aligned LEGO® Solution**
3.AP.PD.1	Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.	**LEGO® Education SPIKE™ Essential – High-Tech Playground**  **SPIKE™ Essential – Trash Monster** 
3.AP.PD.2	Take on varying roles (e.g., researcher, programmer, test developer, designer, recorder) with teacher guidance, when collaborating with peers during the design, implementation, and review stages of program development.	**SPIKE™ Essential – Your School Creation** 
3.AP.V.1	Create programs that use variables to store and modify data.	The SPIKE™ Essential app and the lessons associated allow coding information to be stored, copied, searched, retrieved, modified, and deleted using a computing device. 

Concept: Computing Systems			
Indicator	**Meeting the Standard** ***Students will...***	**LEGO Solution**	**Using the LEGO Education Materials**
3.CS.D.1	Describe how internal and external parts of computing devices function to form a system.	**SPIKE™ Essential – Winning Goal** 	Complete the Winning Goal lesson. Describe how internal and external parts of computing devices function to form a system in the lesson.

Concept: Data and Analysis			
Indicator	**Meeting the Standard** ***Students will...***	**LEGO Solution**	**Using the LEGO Education Materials**
3.DA.CVT.1	Organize and present collected data visually to highlight relationships and support a claim.	**SPIKE™ Essential – Mini Mini-Golf**  **SPIKE™ Essential – Bowling Fun** 	Choose and complete the Mini Mini-Golf or Bowling Fun lesson. Organize and present collected data visually to highlight relationships and support a claim.

Concept: Impacts of Computing			
Indicator	**Meeting the Standard** ***Students will...***	**LEGO Solution**	**Using the LEGO Education Materials**
3.IC.C.1	Discuss computing technologies that have changed the world and express how those technologies influence and are influenced by cultural practices.	**SPIKE™ Essential – Creative Carnival Games** 	Choose and complete the Creative Carnival Games lesson. Discuss and plan with a partner to build a carnival game that represents an example of how technologies influence or are influenced by cultural practices.
3.IC.SLE.1	Use public domain or creative commons media, and refrain from copying or using material created by others without permission.		Choose and complete the Creative Carnival Games lesson. Create a media presentation to accompany their carnival game and use public domain or creative commons media without copying or using material created by others without permission.

Concept: Networks and the Internet			
Indicator	**Meeting the Standard** ***Students will...***	**Aligned LEGO Solution**	**Using the LEGO Education Materials**
3.NI.C.1	Discuss real-world cybersecurity problems and how personal information can be protected.	Build and Talk: LEGO activities about Digital Safety Links to Digital Safety Activities and Games	Complete an activity on Digital Safety. Identify and discuss real-world cybersecurity problems and how personal information can be protected.

Nevada 4th Grade Computer Science Report Card – LEGO® Education Solutions

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Concept: Algorithms and Programming			
Indicator	**Meeting the Standard** ***Students will...***	**LEGO® Solution**	**Using the LEGO® Education Materials**
4.AP.A.1	Test, compare, and refine multiple algorithms for the same task and determine which is the most appropriate.	**LEGO® Education SPIKE™ Essential - Big Bus** 	Complete the Big Bus lesson. Prior to the lesson, students will determine (or receive guidance from teacher) how they will test, compare, and refine multiple algorithms for the same task to determine which is the most appropriate.
4.AP.C.1	Develop programs that include sequences, events, loops, and conditionals.	**SPIKE™ Essential - Cable Car** 	Complete the Cable Car lesson. Code to develop a program that includes the following: sequences, events, loops, and conditionals.
4.AP.M.1	Explore how complex tasks can be decomposed into simple tasks and how simple tasks can be composed into complex tasks.	**SPIKE™ Essential - Get Around Town** 	Complete the Get Around Town lesson. Prior to the lesson, students will consider how simple tasks can be decomposed into complex tasks to identify during this lesson.
4.AP.PD.1	Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.	**SPIKE™ Essential – Taxi! Taxi!** 	Complete the Taxi! Taxi! Lesson. Identify and fix errors within the program so it runs as intended.

Concept: Computing Systems			
Indicator	**Meeting the Standard** ***Students will...***	**LEGO Solution**	**Using the LEGO Education Materials**
4.CS.HS.1	Model how computer hardware and software work together as a system to accomplish tasks.	**SPIKE™ Essential – Swamp Boat** 	Complete the Swamp Boat lesson. Model how part of an existing program (computer hardware and software) work as a system.

Concept: Data and Analysis			
Indicator	**Meeting the Standard** ***Students will...***	**LEGO Solution**	**Using the LEGO Education Materials**
4.DA.IM.1	Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate ideas.	**SPIKE™ Essential - Hovering Helicopter** 	Choose and complete the Hovering Helicopter lesson. Have students collect data which can then be used to propose cause-and-effect relationships, predict outcomes, or communicate ideas.

Concept: Impacts of Computing			
Indicator	**Meeting the Standard** ***Students will...***	**LEGO Solution**	**Using the LEGO Education Materials**
4.IC.C.1	Compare and contrast how computing has changed society from the past to the present.	**SPIKE™ Essential – Happy Traveler Unit** 	Choose and complete any of the lessons in the "Happy Traveler" unit. Compare and contrast how computing has changed society from the past to the present, recalling how tasks represented in the lessons have improved over time.

Concept: Networks and the Internet		
Indicator	**Meeting the Standard** ***Students will...***	**LEGO Solution**
4.NI.NCO.1	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.	

Nevada 5th Grade Computer Science Report Card – LEGO® Education Solutions

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Concept: Algorithms and Programming			
Indicator	**Meeting the Standard** ***Students will...***	**LEGO Solution**	**Using the LEGO Education Materials**
5.AP.M.1	Demonstrate how to decompose a task of complexity into simple tasks and compose a simple task into tasks of complexity.	**LEGO Education SPIKE™ Essential - Good Morning Machine**  **SPIKE™ Essential - Winning Goal** 	Complete the Good Morning Machine or Winning Goal lesson. Define and identify problems or failure points in the solutions to demonstrate how to decompose a task of complexity into simple tasks and compose a simple task into tasks of complexity.
5.AP.M.2	Modify, incorporate, and test portions of an existing program into their own work, to develop something new or add more advanced features.	**SPIKE™ Essential - High-Tech Playground** 	Complete the High-Tech Playground lesson. During this lesson, modify, incorporate, and test portions of the existing lesson program to develop something new or add more advanced features.
5.AD.PD.1	Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.	**SPIKE™ Essential - Big Little Helper**  **SPIKE™ Essential - Trash Monster Machine** 	Complete the Big Little Helper or Trash Monster Machine lesson. Consider how to develop a program while using the iterative process to express an idea or addressing a problem that considers others' perspectives and preferences.
5.AD.PD.2	Describe choices made during program development using code comments, presentations, and demonstrations.	**SPIKE™ Essential - Good Morning Machine** 	Complete the Good Morning Machine lesson. Afterward, students will describe the choices they made during program development using code comments, presentations, and demonstrations.
5.AD.PD.3	Observe intellectual property rights and give appropriate attribution (credit) when creating or remixing programs.	*LEGO Education does not collect intellectual property.*	

Concept: Computing Systems		
Indicator	**Meeting the Standard** ***Students will...***	**Aligned LEGO Solution**
5.CS.T.1	Determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies.	**SPIKE™ Essential – Literary Randomizer** 

Concept: Data and Analysis		
Indicator	**Meeting the Standard** ***Students will...***	**LEGO Solutions**
5.DA.IM.1	Recognize how text, images, and sounds are represented as binary numbers in computing devices.	

Concept: Impacts of Computing		
Indicator	**Meeting the Standard** ***Students will...***	**Aligned LEGO Solution**
5.IC.C.1	Brainstorm ways to improve the accessibility and usability of technology products for the diverse needs and wants of users.	**SPIKE™ Essential - Trash Monster Machine** 
5.IC.SI.1	Seek diverse perspectives for the purpose of improving computational artifacts.	

Concept: Networks and the Internet		
Indicator	**Meeting the Standard** ***Students will...***	**Aligned LEGO Solution**
5.NI.NCO.1	Explain the concept of network protocols.	
5.NI.NCO.2	Identify the advantages and disadvantages of various network types (e.g., wire, Wi-Fi, cellular data).	All SPIKE™ Essential solutions operate using both Wi-Fi and wire connections. Students will identify the advantages and disadvantages of various network types (specifically Wi-Fi and wire connections).