					PK					ŀ	<					G	1			G2		G3		G	34	G5	G6
Grade Range		Massachusetts Science and Technology/Engineering Standards	Free Explore	Counting	Letters	Make 10	Race	Letters	Measurings	Addition	Subtraction	Challenge	Traffic Jam	Line Dance	Motors	Gears	Pulleys	Dancing Birds	Spinning Top	Drumming Monkey	Ride Challenge	Amazing Adventure Story	Vehicle Challenge	Soccer	Burglar Alarm Challenge	NXT Introduction	Dragster Challenge
Physical Scien	ce	Describe the various ways																									
PK-2	3	that objects can move, such as in a straight line, zigzag, back-and-forth, round-and-round, fast, and slow.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	х	x	x	x	x
		Demonstrate that the way to change the motion of an object is to apply a force (give it a push or a pull). The greater the force, the greater the change in the motion of	0	0	0	0	0	0	0	0	0	0	0	0	x	x	x	x	x	x	x	x	x	x	x	x	x
PK-2	4	the object. Recognize that under some																									
PK-2	5	conditions, objects can be balanced.													х	х	х	х	х	х	х	х	х	х	х	х	z
3-5	1	Differentiate between properties of objects (e.g., size, shape, weight) and properties of materials (e.g., color, texture, hardness).																				0	х	0	0	0	0
		Identify the basic forms of energy (light, sound, heat, electrical, and magnetic). Recognize that energy is the ability to cause motion or																									
3-5	4	create change. Give examples of how energy can be transferred from one													x	x	x	x	x	x	х	х	х	x	x	x	х
3-5	5	form to another. Recognize that electricity in circuits requires a complete loop through which an electrical current can pass, and that electricity can produce light, heat, and													x	x	x	x	x	x	x	x	х	x	х	x	x
3-5	6	sound. Identify and classify objects and materials that conduct electricity and objects and materials that are insulators													0	0	0	0	0	0	0	0	0	0	0	0	0
3-5 6-8		of electricity. Explain and give examples of how the motion of an object can be described by its position, direction of motion, and speed.	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	x	x
Technology/En		r																									
PK-2		Identify and describe characteristics of natural materials (e.g., wood, cotton, fur, wool) and human-made materials (e.g., plastic, Styrofoam).	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0

r	1	I									_																
		Identify and explain some																									
		possible uses for natural																									
		materials (e.g., wood, cotton,	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0
		fur, wool) and human-made	١	١٠	U	١	U	١	١	١	١٠	١٠				U	U		٥	١	U	U	١٠	١٠	١٠١	U	١٠
		materials (e.g., plastic,																									
PK-2	1.2	Styrofoam).																									
		Identify materials used to																									
		accomplish a design task																									
		based on a specific property,													0	0	0	0	0	0	х	Х	х	0	x	0	x
		i.e., weight, strength,														0	0		٥	١	^	^	^	١٠	^	U	^
2 5	1 1	hardness, and flexibility.																									
3-5	1.1																										
		Identify and explain the																									
		appropriate materials and																									
		tools (e.g., hammer,																									
		screwdriver, pliers, tape													0	0	0	0	0	0	х	0	х	0	0	0	x
		measure, screws, nails, and														U	U	0	U	٥	Α.	U	^	١٠	١٠١	U	^
		other mechanical fasteners)																									
		to construct a given prototype																									
3-5	12	safely.																									
	1.2	Identify and explain the																									
		difference between simple																									
		and complex machines, e.g.,																									
		hand can opener that													Х	Х	Х	X	Х	Х	Х	Х	Х	Х	Х	Х	Х
		includes multiple gears,																									
		wheel, wedge gear, and																									
3-5	1.3	lever.																									
Engineering De	esign																										
		Identify tools and simple																									
		machines used for a specific																									
		purpose, e.g., ramp, wheel,													X	Х	Х	Х	Х	Х	Х	Х	Х	Х	X	Х	Х
PK-2	21	pulley, lever.																									
1112	2.1	Describe how human beings																									
		1																									
		use parts of the body as tools																									
		(e.g., teeth for cutting, hands																									
		for grasping and catching),																									
		and compare their use with																									
		the ways in which animals																									
		use those parts of their																									
PK-2	2.2	bodies.																									
		Identify a problem that																									
		reflects the need for shelter,													0	0	0	0	0	0	х	o	0	0	0	х	х
3-5	21	storage, or convenience.																	Ŭ		^					^	^
0 0	2.1	Describe different ways in																									
		which a problem can be																									
																						_					,
		represented, e.g., sketches,										Х	0		0	0	0	0	0	0	Х	0	Х	0	Х	Х	Х
		diagrams, graphic organizers,																									
3-5	2.2	and lists.																									
		Identify relevant design																									
		features (e.g., size, shape,																									
		weight) for building a										х	0		0	0	0	0	0	0	х	0	х	0	0	0	х
		prototype of a solution to a																									
3-5	2.3	given problem.																									
-	0	Compare natural systems																									
		with mechanical systems that																									
		are designed to serve similar																									
		purposes, e.g., a bird's wings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0
ا ا		as compared to an airplane's																									
3-5	1 2.4	wings.																									

6-8	2.1	Identify and explain the steps of the engineering design process, i.e., identify the need or problem, research the problem, develop possible solutions, select the best possible solution(s), construct a prototype, test and evaluate, communicate the solution(s), and redesign.										×	×		0	0	0	×	0	0	x	0		0	x	×	x
6-8	22	Demonstrate methods of representing solutions to a design problem, e.g., sketches, orthographic projections, multiview drawings.										x	0		0	0	0	x	0	0	x	0		0	x	0	x
		Describe and explain the													0	0	0	0	0	0	х	0		0	х	0	х
6-8	2.3	purpose of a given prototype.																									
6-8	2.4	Identify appropriate materials, tools, and machines needed to construct a prototype of a given engineering design.													0	0	0	0	o	o	x	0		0	x	0	x
6-8	2.5	Explain how such design features as size, shape, weight, function, and cost limitations would affect the construction of a given prototype													0	0	0	0	0	0	x	0		0	x	0	x
Science Inquiry		prototype																									
Colonico Iriquiry	Okillo	Ask questions about objects,																									
		organisms, and events in the	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	Х	х	х
PK-2		environment. Tell about why and what																									
PK-2		would happen if?	х	х	х	х	х	х	Х	х	х	х	х	х	х	х	Х	х	х	х	х	Х	Х	х	х	Х	Х
PK-2		Make predictions based on observed patterns.	х	х	х	х	х	х	х	х	х	х	х		х	х	х	х	х	х	х	х	х	х	х	Х	х
PK-2		Name and use simple equipment and tools (e.g., rulers, meter sticks, thermometers, hand lenses, and balances) to gather data and extend the senses.							x			0												x		0	0
PK-2		Record observations and data with pictures, numbers, or written statements.		x	x	x	x	х	x	x	x	Х	o	o				x	х	x	x	х	х	x	x	x	х
PK-2		Discuss observations with others.	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х
		Ask questions and make predictions that can be	_	x	v	v	v	v	V	v	v	v	v	v	v	v	v	v	V	v	v	v	х	х	v	v	v
3-5		tested.	0	×	х	х	Х	Х	Х	Х	Х	Х	х	х	Х	Х	Х	Х	Х	Х	Х	х	X	Χ.	Х	X	Х
3-5		Conduct multiple trials to test a prediction. Compare the result of an investigation or experiment with the prediction.										х	x	х				х	х	x			x	x	0	x	x
3-5		Keep accurate records while conducting simple investigations or experiments.		x	x	x	x	x	x	x	x	x	x	x				×	x	x			0	x		x	
3-5		Recognize simple patterns in data and use data to create a reasonable explanation for the results of an investigation or experiment.		х	х	х	х	х	x	х	x	х	x	х	x	x	x	x	х	x	0	0	0	x	0	x	o

		Record data and																									
		communicate findings to																									
		others using graphs, charts,		x	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	Х	х
		maps, models, and oral and																									
3-5		written reports.																									
		Formulate a testable		x	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	x	х	Х	х
6-8		hypothesis. Design and conduct an																									
		experiment specifying																									
		variables to be changed,										0	х	0	0	0	0	0	0	0	0		0	0	х	0	х
6-8		controlled, and measured.																									
		Select appropriate tools and																									
		technology (e.g., calculators,																									
		computers, thermometers,																									
		meter sticks, balances,							х			0	0	0	0	0	0	х	х	х	0	0	0	х	0	Х	х
		graduated cylinders, and																									
		microscopes), and make																									
6-8		quantitative observations.																									
		Present and explain data and																									
		findings using multiple																									
		representations, including		0					0	0	0		х	х	0	0	0	0	0	0	х	0	х	0	0	0	х
		tables, graphs, mathematical and physical models, and																									
6-8		demonstrations.																									
0-0		demonstrations.																									
		Draw conclusions based on																									
		data or evidence presented in																									
		tables or graphs, and make		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		inferences based on patterns																									
6-8		or trends in the data.																									
		Communicate procedures																									
		and results using appropriate	x	x	x	х	х	x	х	x	х	х	x	x	х	x	x	х	х	$ _{x} $	х	х	x	x	x	х	x
		science and technology	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
6-8		terminology.																									
		Offer explanations of	l	l																							
6-8		procedures, and critique and revise them.	Х	X	Х	Х	Χ	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	х	Х	Х	Х	Х	Х	Х	Х
	lam Solvin	ng, and Communication																									
Research, F100	ICITI GOIVII	Use content-specific																									
		technology tools (e.g.,																									
		environmental probes,																									
		sensors, measuring devices,	X	X	х	Х	Χ	Х	Х	Х	Х	Х	х	х	Х	Х	Х	Х	Х	х	Х	Х	Х	Х	Х	Х	Х
		simulations) to gather and																									
3-5	3.4	analyze data.																									
		With teacher direction, use																									
		appropriate technology tools																									
		(e.g., graphic organizer) to																			0		0		0		0
	2.0	define problems and propose																									
3-5		hypotheses.																									
Manufacturing T	echnologi	es Explain and give examples of																									
		the impacts of																									
		interchangeable parts,																									
		components of mass-	x	x	x	х	х	x	х	x	х	х	x	x	х	x	х	х	х	x	х	х	х	x	x	х	x
		produced products, and the	``	``	<u> </u>	ı,	,,	'	'	,,	-,	•	,	(ı î	, i			"	,		
		use of automation, e.g.,																									
6-8	4.2	robotics.																									
Transportation T	Technologi	es																									
		Identify and compare																									
		examples of transportation																									
		systems and devices that	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	х	X
		operate on each of the					,	Ĭ				J							J		٦	,				^	^
	^ .	following: land, air, water, and																									
6-8	6.1	space.																									

6-8	Identify and describe three subsystems of a transportation vehicle or device, i.e., structural, propulsion, guidance, suspension, control, and support.						С	0	0	0	0	0	0	0	х	0	0	x	x
6-8	Identify and explain lift, drag, friction, thrust, and gravity in a vehicle or device, e.g., cars, boats, airplanes, rockets.						C	0	0	0	0	0	0	o	x	0	0	x	x

X = addresses standard

o = partially addresses standard