ITEEA Standards Alignment

Student Standards

Legend

●	The standard is clearly addressed by program activities.
-	This standard potentially could be addressed as part of *FIRST*® LEGO® League Explore either by actions that the coach or teacher takes when working with the students or by conditions established by the program.

Grades K-2

Cluster	Indicator	Indicator Statement	Addressed
The Nature of Technology	1	Students will develop an understanding of the characteristics and scope of technology.	●
	A	*The natural world and human-made world are different.*	-
	B	*All people use tools and techniques (technology) to help them do things.*	-
	2	Students will develop an understanding of the core concepts of technology.	●
	A	*Some systems are found in nature, and some are made by humans.*	-
	B	*Systems have parts or components that work together to accomplish a goal.*	-
	C	*Tools are simple objects that help humans complete tasks.*	-
	D	*Different materials are used in making things.*	●
	E	*People plan in order to get things done.*	●
	3	Students will develop an understanding of the relationships among technologies and the connections between technology and other fields of study.	-
	A	*The study of technology uses many of the same ideas and skills as other subjects.*	-
Technology and Society	4	Students will develop an understanding of the cultural, social, economic, and political effects of technology.	-
	A	*The use of tools and machines can be helpful or harmful.*	-
	5	Students will develop an understanding of the effects of technology on the environment.	-
	A	*Some materials can be reused and/or recycled.*	-
	6	Students will develop an understanding of the role of society in the development and use of technology.	-
	A	*Products are made to meet individual needs and wants.*	-
	7	Students will develop an understanding of the influence of technology on history.	-
	A	*The way people live and work has changed throughout history because of technology.*	-
Design	8	Students will develop an understanding of the attributes of design.	●
	A	*Everyone can design solutions to a problem.*	●
	B	*Design is a creative process.*	●
	9	Students will develop an understanding of engineering design.	●
	A	*The engineering design process includes identifying a problem, looking for ideas, developing solutions, and sharing solutions with others.*	●
	B	*Expressing ideas to others verbally and through sketches and models is an important part of the design process.*	●
	10	Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.	●
	A	*Asking questions and making observations helps a person to figure out how things work.*	●
	B	*All products and systems are subject to failure. Many products and systems, however, can be fixed.*	-

Abilities for a Technological World	11	Students will develop abilities to apply the design process.	●
	A	*Brainstorm people's needs and wants and pick some problems that can be solved through the design process.*	●
	B	*Build or construct an object using the design process.*	-
	C	*Investigate how things are made and... can be improved.*	●
	12	Students will develop abilities to use and maintain technological products and systems.	●
	A	*Discover how things work.*	●
	B	*Use hand tools correctly & safely & name them correctly.*	-
	C	*Recognize and use everyday symbols.*	-
	13	Students will develop abilities to assess the impact of products and systems.	-
	A	*Collect information about everyday products and systems by asking questions.*	-
	B	*Determine if the human use of a product or system creates positive or negative results.*	-
The Designed World	14	Students will develop an understanding of and be able to select and use medical technologies.	-
	A	*Vaccinations protect people from getting certain diseases.*	-
	B	*Medicine helps people who are sick to get better.*	-
	C	*There are many products designed specifically to help people take care of themselves.*	-
	15	Students will develop an understanding of and be able to select and use agricultural and related biotechnologies.	-
	A	*The use of technologies in agriculture makes it possible for food to be available year round and to conserve resources.*	-
	B	*There are many different tools necessary to control and make up the parts of an ecosystem.*	-
	16	Students will develop an understanding of and be able to select and use energy and power technologies.	-
	A	*Energy comes in many forms.*	-
	B	*Energy should not be wasted.*	-
	17	Students will develop an understanding of and be able to select and use information and communication technologies.	-
	A	*Information is data that has been organized.*	-
	B	*Technology enables people to communicate by sending and receiving information over a distance.*	-
	C	*People use symbols when they communicate by technology.*	-
	18	Students will develop an understanding of and be able to select and use transportation technologies.	-
	A	*A transportation systems has many parts that work together to help people travel.*	-
	B	*Vehicles move people or goods from one place to another in water, air or space, and on land.*	
	C	*Transportation vehicles must be cared for to prolong use.*	-
	19	Students will develop an understanding of and be able to select and use manufacturing technologies.	-
	A	*Manufacturing systems produce products in quantity.*	-
	B	*Manufactured products are designed.*	-
	20	Students will develop an understanding of and be able to select and use construction technologies.	-
	A	*People live, work, & go to school in buildings, which are of different types: houses... office buildings, & schools.*	-
	B	*The type of structure determines how the parts are put together.*	-

Grades 3-5

Cluster	Indicator	Indicator Statement	Addressed
The Nature of Technology	1	Students will develop an understanding of the characteristics and scope of technology.	●
	C	*Things that are found in nature differ from things that are human-made in how they are produced and used.*	-
	D	*Tools, materials, and skills are used to make things and carry out tasks.*	-
	E	*Creative thinking and economic and cultural influences shape technological development.*	-
	2	Students will develop an understanding of the core concepts of technology.	●
	F	*A subsystem is a system that operates as a part of another system.*	-
	G	*When parts of a system are missing, it may not work as planned.*	-
	H	*Resources are the things needed to get a job done, such as tools and machines, materials, information, energy, people, capital, and time.*	-
	I	*Tools are used to design, make, use, and assess technology.*	-
	J	*Materials have many different properties.*	-
	K	*Tools and machines extend human capabilities, such as holding, lifting, carrying, fastening, separating, and computing.*	●
	L	*Requirements are the limits to designing or making a product or system.*	●
	3	Students will develop an understanding of the relationships among technologies and the connections between technology and other fields of study.	-
	B	*Technologies are often combined.*	-
	C	*Various relationships exist between technology and other fields of study.*	-
Technology and Society	4	Students will develop an understanding of the cultural, social, economic, and political effects of technology.	-
	B	*When using technology, results can be good or bad.*	-
	C	*The use of technology can have unintended consequences.*	-
	5	Students will develop an understanding of the effects of technology on the environment.	-
	B	*Waste must be appropriately recycled or disposed of to prevent unnecessary harm to the environment.*	-
	C	*The use of technology affects the environment in good and bad ways.*	-
	6	Students will develop an understanding of the role of society in the development and use of technology.	-
	B	*Because people's needs and wants change, new technologies are developed, and old ones are improved to meet those changes.*	-
	C	*Individual, family, community, and economic concerns may expand or limit the development of technologies.*	-
	7	Students will develop an understanding of the influence of technology on history.	-
	B	*People have made tools to provide food, to make clothing, and to protect themselves.*	-
Design	8	Students will develop an understanding of the attributes of design.	●
	C	*The design process is a purposeful method of planning practical solutions to problems.*	●
	D	*Requirements for a design include such factors as the desired elements and features of a product or system or the limits that are placed on the design.*	●
	9	Students will develop an understanding of engineering design.	●
	C	*The engineering design process involves defining a problem, generating ideas, selecting a solution, testing the solution(s), [making, evaluating, and presenting].*	●
	D	*When designing an object it is important to be creative and consider all ideas.*	●
	E	*Models are used to communicate & test design ideas & processes.*	●
	10	Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.	●
	C	*Troubleshooting is a way of finding out why something does not work so that it can be fixed.*	●
	D	*Invention and innovation are creative ways to turn ideas into real things.*	●
	E	*The process of experimentation, which is common in science, can also be used to solve technological problems.*	-

Abilities for a Technological World	11	Students will develop abilities to apply the design process.	●
	D	*Identify and collect information about everyday problems that can be solved by technology, and generate ideas and requirements for solving a problem.*	-
	E	*The process of designing involves presenting some possible solutions in visual form and then selecting the best solution(s)… .*	-
	F	*Test and evaluate the solutions for the design problem.*	-
	G	*Improve the design solutions.*	-
	12	Students will develop abilities to use and maintain technological products and systems.	●
	D	*Follow step-by-step directions to assemble a product.*	●
	E	*Select and safely use tools, products, and systems for specific tasks.*	-
	F	*Use computers to access and organize information.*	●
	G	*Use common symbols, such as numbers and words, to communicate key ideas.*	●
	13	Students will develop abilities to assess the impact of products and systems.	-
	C	*Compare, contrast and classify collected information in order to identify patterns.*	-
	D	*Investigate and assess the influence of a specific technology on the individual, family, community, and environment.*	-
	E	*Examine the trade-offs of using a product or system and decide when it could be used.*	-
The Designed World	14	Students will develop an understanding of and be able to select and use medical technologies.	-
	D	*Vaccines are designed to prevent diseases from developing and spreading; medicines are designed to relieve symptoms and stop diseases from developing.*	-
	E	*Technological advances have made it possible to create new devices, to repair or replace certain parts of the body, and to provide a means for mobility.*	-
	F	*Many tools & devices have been designed to help provide clues about health and to provide a safe environment.*	-
	15	Students will develop an understanding of and be able to select and use agricultural and related biotechnologies.	-
	C	*Artificial ecosystems are human-made environments that are designed to function as a unit and are comprised of humans, plants, and animals.*	-
	D	*Most agricultural waste can be recycled.*	-
	E	*Many processes used in agriculture require different procedures, products or systems.*	-
	16	Students will develop an understanding of and be able to select and use energy and power technologies.	-
	C	*Energy comes in different forms.*	-
	D	*Tools, machines, products, and systems use energy in order to do work.*	-
	17	Students will develop an understanding of and be able to select and use information and communication technologies.	-
	D	*The processing of information through the use of technology can be used to help humans make decisions and solve problems.*	-
	E	*Information can be acquired & sent through a variety of technological sources, including print & electronic media.*	-
	F	*Communication technology is the transfer of messages among people and/or machines over distances through the use of technology.*	-
	G	*Letters, characters, icons, and signs are symbols that represent ideas, quantities, elements and operations.*	-
	18	Students will develop an understanding of and be able to select and use transportation technologies.	-
	D	*The use of transportation allows people and goods to be moved from place to place.*	-
	E	*A transportation system may lose efficiency/fail if a part is missing/malfunctioning or a subsystem isn't working.*	-
	19	Students will develop an understanding of and be able to select and use manufacturing technologies.	-
	C	*Processing systems convert natural materials into products.*	-
	D	*Manufacturing processes include designing products, gathering resources, and using tools to separate, form, and combine materials in order to produce products.*	-
	E	*Manufacturing enterprises exist because of a consumption of goods.*	-

	20	Students will develop an understanding of and be able to select and use construction technologies.	-
	C	*Modern communities are usually planned according to guidelines.*	-
	D	*Structures need to be maintained.*	-
	E	*Many systems are used in buildings.*	-