Applied Design, Skills, and Technologies K-9 – Curricular Competencies
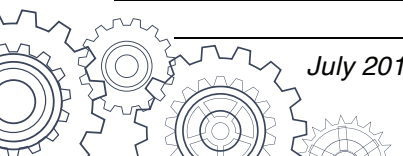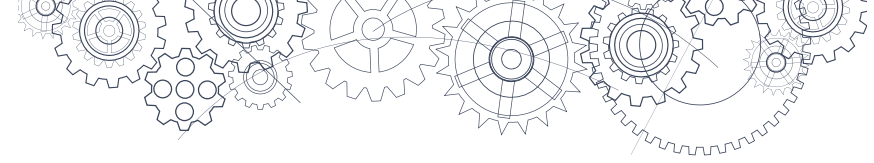
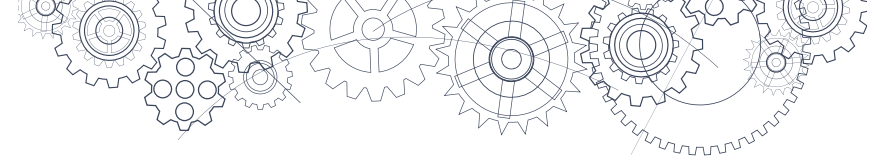| Grade	Applied Design							Applied Skills	Applied Technologies
	Understanding Context	*Defining*	*Ideating*	*Prototyping*	*Testing*	*Making*	*Sharing*		
K-3			• Identify needs and opportunities for designing, through exploration • Generate ideas from their experiences and interests • Add to others' ideas • Choose an idea to pursue			• Choose tools and materials • Make a product using known procedures or through modelling of others • Use trial and error to make changes, solve problems, or incorporate new ideas from self or others	• Decide on how and with whom to share their product • Demonstrate their product, tell the story of designing and making their product, and explain how their product contributes to the individual, family, community, and/or environment • Use personal preferences to evaluate the success of their design solutions • Reflect on their ability to work effectively both as individuals and collaboratively in a group	• Use materials, tools, and technologies in a safe manner in both physical and digital environments • Develop their skills and add new ones through play and collaborative work	• Explore the use of simple, available tools and technologies to extend their capabilities
4-5	• Gather information about or from potential users	• Choose a design opportunity • Identify key features or user requirements • Identify the main objective for the design and any constraints	• Generate potential ideas and add to others' ideas • Screen ideas against the objective and constraints • Choose an idea to pursue	• Outline a general plan, identifying tools and materials • Construct a first version of the product, making changes to tools, materials, and procedures as needed • Record iterations of prototyping	• Test the product • Gather peer feedback and inspiration • Make changes and test again, repeating until satisfied with the product	• Construct the final product, incorporating planned changes	• Decide on how and with whom to share their product • Demonstrate their product and describe their process • Determine whether their product meets the objective and contributes to the individual, family, community, and/or environment	• Use materials, tools, and technologies in a safe manner, and with an awareness of the safety of others, in both physical and digital environments • Identify the skills required for a task and develop those skills as needed	• Use familiar tools and technologies to extend their capabilities when completing a task • Choose appropriate technologies to use for specific tasks • Demonstrate a willingness to learn new technologies as needed

Applied Design, Skills, and Technologies K-9 – Curricular Competencies – *continued*

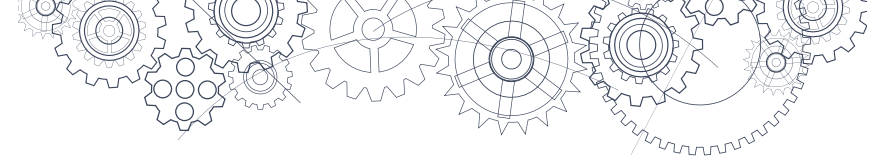| Grade	Applied Design							Applied Skills	Applied Technologies
	Understanding Context	*Defining*	*Ideating*	*Prototyping*	*Testing*	*Making*	*Sharing*		
4-5							• Reflect on their design thinking and processes, and their ability to work effectively both as individuals and collaboratively in a group, including their ability to share and maintain a co-operative work space • Identify new design issues		
6-7	• Empathize with potential users to find issues and uncover needs and potential design opportunities	• Choose a design opportunity • Identify key features or potential users and their requirements • Identify criteria for success and any constraints	• Generate potential ideas and add to others' ideas • Screen ideas against criteria and constraints • Evaluate personal, social, and environmental impacts and ethical considerations • Choose an idea to pursue	• Identify and use sources of information • Develop a plan that identifies key stages and resources • Explore and test a variety of materials for effective use • Construct a first version of the product or a prototype, as appropriate, making changes to tools, materials, and procedures as needed • Record iterations of prototyping	• Test the first version of the product or the prototype • Gather peer and/or user and/or expert feedback and inspiration • Make changes, troubleshoot, and test again	• Identify and use appropriate tools, technologies, and materials for production • Make a plan for production that includes key stages, and carry it out, making changes as needed • Use materials in ways that minimize waste	• Decide on how and with whom to share their product • Demonstrate their product and describe their process, using appropriate terminology and providing reasons for their selected solution and modifications • Evaluate their product against their criteria and explain how it contributes to the individual, family, community, and/or environment • Reflect on their design thinking and processes, and	• Demonstrate an awareness of precautionary and emergency safety procedures in both physical and digital environments • Identify and evaluate the skills and skill levels needed, individually or as a group, in relation to a specific task, and develop them as needed	• Select, and as needed learn about, appropriate tools and technologies to extend their capability to complete a task • Identify the personal, social, and environmental impacts, including unintended negative consequences, of the choices they make about technology use • Identify how the land, natural resources, and culture influence the development and use of tools and technologies

Applied Design, Skills, and Technologies K-9 – Curricular Competencies – *continued*

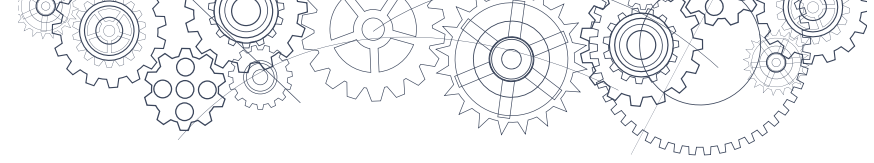| Grade	Applied Design							Applied Skills	Applied Technologies
	Understanding Context	*Defining*	*Ideating*	*Prototyping*	*Testing*	*Making*	*Sharing*		
6-7							evaluate their ability to work effectively both as individuals and collaboratively in a group, including their ability to share and maintain an efficient co-operative work space • Identify new design issues		
8	• Empathize with potential users to find issues and uncover needs and potential design opportunities	• Choose a design opportunity • Identify key features or potential users and their requirements • Identify criteria for success and any constraints	• Generate potential ideas and add to others' ideas • Screen ideas against criteria and constraints • Evaluate personal, social, and environmental impacts and ethical considerations • Choose an idea to pursue	• Identify and use sources of information • Develop a plan that identifies key stages and resources • Explore and test a variety of materials for effective use • Construct a first version of the product or a prototype, as appropriate, making changes to tools, materials, and procedures as needed • Record iterations of prototyping	• Test the first version of the product or the prototype • Gather peer and/or user and/or expert feedback and inspiration • Make changes, troubleshoot, and test again	• Identify and use appropriate tools, technologies, and materials for production • Make a plan for production that includes key stages, and carry it out, making changes as needed • Use materials in ways that minimize waste	• Decide on how and with whom to share their product • Demonstrate their product and describe their process, using appropriate terminology and providing reasons for their selected solution and modifications • Evaluate their product against their criteria and explain how it contributes to the individual, family, community, and/or environment • Reflect on their design thinking and processes, and evaluate their ability to work effectively both	• Demonstrate an awareness of precautionary and emergency safety procedures in both physical and digital environments • Identify and evaluate the skills and skill levels needed, individually or as a group, in relation to a specific task, and develop them as needed	• Select, and as needed learn about, appropriate tools and technologies to extend their capability to complete a task • Identify the personal, social, and environmental impacts, including unintended negative consequences, of the choices they make about technology use • Identify how the land, natural resources, and culture influence the development and use of tools and technologies

Applied Design, Skills, and Technologies K-9 – Curricular Competencies – *continued*

Grade	Applied Design							Applied Skills	Applied Technologies
	Understanding Context	*Defining*	*Ideating*	*Prototyping*	*Testing*	*Making*	*Sharing*		
8							as individuals and collaboratively in a group, including their ability to share and maintain an efficient co-operative work space • Identify new design issues		
9	• Engage in a period of research and empathetic observation in order to understand design opportunities	• Choose a design opportunity • Identify potential users and relevant contextual factors • Identify criteria for success, intended impact, and any constraints	• Take creative risks in generating ideas and add to others' ideas in ways that enhance them • Screen ideas against criteria and constraints • Critically analyze and prioritize competing factors, including social, ethical, and sustainability considerations, to meet community needs for preferred futures • Choose an idea to pursue, keeping other potentially viable ideas open	• Identify and use sources of inspiration and information • Choose a form for prototyping and develop a plan that includes key stages and resources • Evaluate a variety of materials for effective use and potential for reuse, recycling, and biodegradability • Prototype, making changes to tools, materials, and procedures as needed • Record iterations of prototyping	• Identify sources of feedback • Develop an appropriate test of the prototype • Conduct the test, collect and compile data, evaluate data, and decide on changes • Iterate the prototype or abandon the design idea	• Identify and use appropriate tools, technologies, materials, and processes for production • Make a step-by-step plan for production and carry it out, making changes as needed • Use materials in ways that minimize waste	• Decide on how and with whom to share their product and processes • Demonstrate their product to potential users, providing a rationale for the selected solution, modifications, and procedures, using appropriate terminology • Critically evaluate the success of their product, and explain how their design ideas contribute to the individual, family, community, and/or environment	• Demonstrate an awareness of precautionary and emergency safety procedures in both physical and digital environments • Identify the skills and skill levels needed, individually or as a group, in relation to specific projects, and develop and refine them as needed	• Choose, adapt, and if necessary learn about appropriate tools and technologies to use for tasks • Evaluate the personal, social, and environmental impacts, including unintended negative consequences, of the choices they make about technology use • Evaluate how the land, natural resources, and culture influence the development and use of tools and technologies

Applied Design, Skills, and Technologies K-9 – Curricular Competencies – *continued*

Grade	Applied Design							Applied Skills	Applied Technologies
	Understanding Context	*Defining*	*Ideating*	*Prototyping*	*Testing*	*Making*	*Sharing*		
9							• Critically reflect on their design thinking and processes, and evaluate their ability to work effectively both as individuals and collaboratively in a group, including their ability to share and maintain an efficient co-operative work space • Identify new design issues		