# TECHNOLOGY AND THE SKILLED TRADES, GRADE 10, TAS2O COURSE PLAN 2026

The Ontario Science Centre and the Ontario Council for Technology Education, with support from the Ontario Ministry of Education, are pleased to present this course plan for Technology and the Skilled Trades (TAS2O), designed to support educators in their delivery of this program.

## Course Plan Introduction

A course plan outlines and organizes curriculum expectations. It is a living document that is revised as educators become increasingly aware of the abilities, strengths, needs and interests of their students. Implementation may vary by institution; the curriculum can be delivered through a single Broad-Based Technology (BBT) course, a multi-course integration or a rotational model.

A thoughtfully developed course plan:

- ensures that instruction is sequenced in a manner that aligns with the development of the skills connected to the Engineering Design Process (EDP) within the Technology Curriculum
- allocates the appropriate time for the development of the fundamental concepts connected to the process of learning through the EDP so that students have multiple opportunities to focus on the overall expectations in the course
- aligns curricular processes, fundamental concepts and skills with project-based learning, demonstrating their application across subject areas and real-world contexts
- ensures that all overall expectations are addressed at least once within the course

Note:

This course plan represents one possible approach to sequencing instruction in TAS2O. Educators are encouraged to adapt and refine this plan to reflect local contexts, available resources and the learning needs of their students, while maintaining alignment with the overall expectations of the course. Cluster completion times outlined in this course plan are estimates.

# Vision and Goals of Technological Education, Grades 9 and 10s

The vision of the technological education program in Grades 9 and 10 is for all students to acquire and develop the skills and knowledge related to technological education that will support them in contributing to the global economic, scientific, and societal innovations of tomorrow. This learning will enhance their ability to achieve success in secondary school, the workplace, postsecondary education or training, and daily life. A central component of this curriculum is safe, practical, hands-on, experiential learning that will support students in becoming technologically literate citizens. That is, they are able to understand, work with, and benefit from a range of technologies – skills that are necessary given the power, reach, and rapid evolution of technology. To succeed in today's rapidly changing and technologically dependent society, students need to be effective problem solvers and critical thinkers, able to understand, question, anticipate, and respond to the implications of technological innovation. Students who pursue careers in technology will also need these high-level skills to develop solutions to technological challenges or to provide the services required in their chosen fields.

The goals of the technological education curriculum for Grades 9 and 10 are to enable students to:

- gain an understanding of the fundamental technological concepts underlying technological education through hands-on, project-based learning while developing technical skills;
- develop creative and flexible approaches to problem solving that will help them address challenges in various areas in everyday life;
- develop a level of technological proficiency that will allow them to be critical consumers and producers of technological solutions;
- explore the impact and development of technology, including emerging technological innovations;
- see themselves as capable and successful STEM (science, technology, engineering, and mathematics) learners and practitioners;
- explore career opportunities in technological fields and the skilled trades, and make connections that will help them take advantage of job skills programs and potential postsecondary pathways, including apprenticeship.

(Ontario Ministry of Education. (2024). Technological Education, Grades 9-10 (TAS2O). https://www.dcp.edu.gov.on.ca/en/curriculum/technological-education/courses/tas2o/g9-10-intro)

# Reflective Questions for Consideration

Consider the following questions when developing, implementing, and reflecting on course plans.

How can my plans:

- incorporate, honour and value student voice, choice and lived experiences to support engagement and understanding?
- effectively use diverse resources, examples and pedagogical approaches?
- incorporate tasks that reflect high expectations for all students while remaining accessible and respectful?
- support the multiple ways information should be collected and assessed (for example, conversation, observations, products)?
- support students' exploration of pathways and connections associated with various technology related careers?
- provide hands-on learning experiences, enable students to deepen their understanding of the skilled trades and improve their technological fundamental skills?
- support academic success by providing students with a range of opportunities to demonstrate their understanding of technological education concepts while applying science, math and the engineering design process?

# Cycle 1: Technology, Society and Sustainability

**Approximate time for completion: 25 hours**

This cycle explores how technological developments impact people, communities and the environment. TAS helps students examine how technology is designed to meet human needs while considering safety, ethics and environmental responsibility. Through hands-on projects and the engineering design process, students will learn to make informed design choices, evaluate materials and processes and understand the social and environmental consequences of technology. This focus helps students develop critical thinking, problem-solving and transferable skills while encouraging responsible, sustainable approaches to technology in everyday life and future careers.

## Cluster 1: Technology Impact Case Study

**Approximate time for completion: 5 hours**

Students will research a piece of technology used in a trade's sector and analyze its social, environmental and ethical impacts. By examining positive and negative effects, students will develop an understanding of how technology influences daily life, workplaces and overall sustainability. The case study requires students to assess consequences and consider responsible use of technology.

### Topics and Expectations

- Design Processes and Related Skills: A1.1, A1.5, A2.1, A2.4, A2.5, A3.1, A3.4
- Technological Development, Impacts, and Careers: B1.1, B1.2, B1.3, B1.4, B3.1, B3.2, B3.3

| Skills and Connections | Specific Expectations |
|---|---|
| Students will prototype, investigate and/or audit a small product or service. They will apply fundamental technological concepts, consider accessibility, sustainability and user needs, and establish evaluation criteria to evaluate success. | A1.1, A1.5, A2.1, A2.4, A2.5, A3.1, A3.4 |
| Students will investigate technological solutions across multiple broad-based technologies by examining user needs, societal and environmental impacts, diverse Canadian contributions and related career pathways in technological fields and the skilled trades. | B1.1, B1.2, B3.1, B3.2, B3.3 |
| Students will make connections to how diverse communities, including First Nations, Métis and Inuit peoples, have drawn on various knowledge systems to find innovative approaches to technological problem solving and sustainability. | B1.3, B1.4 |

# Cluster 2: Sustainable Redesign Challenge

**Approximate time for completion: 15 hours**

Students will apply the engineering design process to sustainably redesign an existing product or process. By justifying material choices, waste reduction strategies and/or energy efficiency improvements, students will connect technological decision-making to sustainability and responsible innovation.

## Topics and Expectations

- Design Processes and Related Skills: A2.2, A2.3, A3.1, A3.3, A4.1, A4.2, A4.5, A4.6
- Technological Development, Impacts, and Careers: B1.4, B2.1, B2.2, B2.3

| Skills and Connections | Specific Expectations |
|---|---|
| Students will plan and create or redesign a product using sustainable materials, address challenges with critical thinking and reflect on the local and global impacts of their technological choices. | A2.2, A2.3, A3.1, B2.2, B2.3 |
| Students will research and assess local and global impacts of various technological innovations on the environment and the economy. | A4.2, B1.4, B2.2 |
| Students will identify hazardous waste generated in technology courses. Students will identify proper safety and environmental protocols, including completing a recognized safety quiz or certification. Students will research how waste materials are managed in technology and skilled trades careers and explore innovative ways waste can be reduced, reused or converted into energy or other positive applications. | A3.3, A4.1, A4.2, A4.5, A4.6, B2.1 |

# Cluster 3: Technology Choices and Consumer Awareness Reflection

**Approximate time for completion: 10 hours**

Through analysis of real-world consumer products and practices, students will explore how demand influences technological production and sustainability. The reflective component allows students to connect curriculum concepts to their own lives and demonstrate an understanding of responsible and informed technological choices.

## Topics and Expectations

- Design Processes and Related Skills: A1.3, A1.5, A2.2, A2.3, A3.2, A3.3, A4.1, A4.2, A4.4, A4.6
- Technological Development, Impacts, and Careers: B1.1, B1.2, B2.1, B2.2

| Skills and Connections | Specific Expectations |
|---|---|
| Students will examine a common product, service or technological process and analyze its design, materials, tools or methods. Students will consider factors such as cost, sustainability, safety, durability and user needs. | A1.3, A1.5, A2.2, A2.3, A4.2 |
| Students will investigate how consumer demand, trends and marketing influence technological development within their broad-based technology focus area. Students will reflect on how consumers can make informed choices and how technologists have a responsibility to design and deliver products or services that balance performance, cost and social responsibility. | A2.3, A3.2, A3.3, B1.1, B1.2 |
| Students will reflect on a technological solution or project they have engaged with and assess its short- and long-term impacts. | A4.1, A4.2, A4.4, A4.6, B2.1, B2.2 |

## Cycle 2: Design Thinking, Problem Solving and Planning

**Approximate time for completion: 35 hours**

Design Thinking, Problem Solving and Planning is central to the Grade 10 course as it guides students in developing thoughtful and effective technological solutions. Students will learn to identify real-world problems, conduct research, generate and test ideas and refine their designs using the engineering design process. This focus encourages creativity, critical thinking and evidence-based decision-making while reinforcing that successful technology is built through planning, testing and reflection. By developing these transferable skills, students will gain confidence in tackling challenges and be prepared for future learning, careers and everyday problem solving.

# Cluster 1: Empathy-Based Design

**Approximate time for completion: 15 hours**

Students will learn to identify user needs through investigation and inquiry, with a focus on accessibility, inclusivity and diverse perspectives.

## Topics and Expectations

- Design Processes and Related Skills: A1.1, A1.3, A1.4, A1.5, A1.7, A2.2, A3.3, A3.4, A3.5, A4.1, A4.2, A4.4
- Technological Development, Impacts, and Careers: B1.1, B1.2, B2.1, B2.3

| Skills and Connections | Specific Expectations |
|---|---|
| Students will begin the engineering design process and identify a problem by investigating user needs, design considerations and accessibility requirements. Students will develop related vocabulary (for example, ergonomics, dietary restrictions, AODA compliance, user interface contrast). | A1.1, A1.3, A1.4, A4.1, B1.1, B2.1 |
| Students will explore real-world examples of ineffective or exclusive designs, identifying the ways these designs create obstacles for users. Then, they will relate their findings to user needs and propose improvements through a presentation, redesign sketch or prototype. | A1.3, A3.5, A4.2, B1.1, B1.2, B2.1, B2.3 |
| Students will design a user experience (UX) questionnaire to gather information about a prospective user's feelings, thoughts, needs, preferences and behaviours related to a product or service. | A1.3, A1.5, A1.7, A2.2, A3.3, A4.4, B1.1 |
| Students will create a plan to improve a specific design, service or system using relevant data they have collected. Students will explain their solution using language that focuses on accessibility and inclusion. | A3.4, A3.5, B1.1 |

## Cluster 2: Speaking the Lingo

**Approximate time for completion: 10 hours**

Students will explore how technical ideas, information and processes are communicated across a variety of technological disciplines.

### Topics and Expectations

- Design Processes and Related Skills: A1.2, A1.4, A1.5, A2.1, A2.5, A2.6, A3.2, A3.5, A4.1, A4.2
- Technological Development, Impacts, and Careers: B3.1, B3.4

| Skills and Connections | Specific Expectations |
|---|---|
| Students will explore industry-standard formats (for example, metric vs. imperial systems, ISO 129, IPv4 protocol, DXF/DWG, point-of-sale systems) to understand their intended use, the fields that rely on them and the benefits and limitations of each standard. | A1.2, A1.4, A2.5, A3.2, A4.1, B3.1 |
| Students will apply a structured revision and feedback process to a technical planning document (for example, drawing, storyboard or process plan) and use notes or annotations to identify strengths and suggest improvements. This process will help them improve the accuracy, clarity and overall quality of the document. | A1.4, A4.1, A4.2 |
| Students will develop familiarity with industry standards through the creation of planning documents (for example, specification sheets, blueprints, bill of materials, flowcharts, storyboards, drawings). Students will consider industry-specific vocabulary and best practices (for example, codes, nomenclature, WHMIS symbols, terminology). | A1.2, A1.4, A2.5, A3.2, B3.4 |
| Students will practise their communication skills by delivering clear verbal instructions. Students will form pairs without seeing each other's work and take turns completing a task (for example, assembling a simple LEGO model, completing a puzzle or combining ingredients) guided only by their partner's spoken directions. | A1.4, A2.1, A2.6, A3.5 |
| Students will evaluate examples of documentation of varying quality and detail to identify the key elements of effective documentation. | A1.5, A2.5, A3.2 |

## Cluster 3: From Idea to Plan

**Approximate time for completion: 10 hours**

Students will develop strategies, organizational skills and resiliency to structure their approach when moving from an initial idea to a planned solution.

### Topics and Expectations

- Design Processes and Related Skills: A1.6, A1.7, A2.1, A2.2, A2.3, A2.4, A2.5, A3.1, A3.2, A3.3, A4.1, A4.5
- Technological Development, Impacts, and Careers: B2.1, B2.3, B3.1

| Skills and Connections | Specific Expectations |
|---|---|
| Students will apply project management methods and approaches (for example, Scrum boards, Gantt charts, Kanban, 80/20 rule) to complete a specified task. They will use these tools to organize workflow, manage resources and reflect on how project management supports successful outcomes. | A1.6, A1.7, A2.1, A2.2, A3.2, A3.3, B2.1, B2.3, B3.1 |
| Students will explore and select materials and resources for a design or project based on their properties, characteristics, environmental impact and/or cost. | A2.3, A2.4, A2.5, A4.5 |
| Students will establish and justify evaluation criteria for a "minimum viable product (MVP)" of their chosen solution. Students will co-create a safety checklist with their instructor. | A2.1, A2.2, A2.5, A3.1, A3.2, A4.1 |

## Cycle 3: Technical Skills, Tools and Fabrication

**Approximate time for completion: 35 hours**

Technical Skills, Tools and Fabrication are a key focus in the Grade 10 Technology and the Skilled Trades course as students learn how ideas are transformed into tangible products. Through hands-on experiences, students will develop practical skills using a variety of tools, equipment, materials and fabrication techniques. This cycle emphasizes precision, measurement and quality craftsmanship while reinforcing safe and responsible tool use, including digital tools. Building technical competence supports problem solving, confidence and independence and prepares students for future pathways in technology, skilled trades and design-related fields.

# Cluster 1: Responsible Tool Operation

**Approximate time for completion: 15 hours**

Students will learn proper tool selection, handling and safety protocols while completing simple fabrication tasks.

## Topics and Expectations

- Design Processes and Related Skills: A1.4, A2.4, A2.6, A2.7, A3.1, A3.5, A4.1, A4.2, A4.3, A4.4, A4.6
- Technological Development, Impacts, and Careers: B1.2, B3.1

| Skills and Connections | Specific Expectations |
|---|---|
| Students will identify possible safety hazards, safety protocols and personal protective equipment (PPE) through the creation of a scaled floor plan of the classroom, workshop or salon. Students will be provided opportunities for design improvements using industry safety guidelines. | A2.7, A4.1, A4.2 |
| Students will identify and demonstrate safe work habits while using a variety of tools commonly found in technology classrooms (for example, hand tools, testers, portable power tools, machines). Through guided demonstrations and practice, students will learn correct tool selection, handling, setup and shutdown procedures, with a focus on minimizing risk and preventing damage to materials and equipment. | A2.4, A4.2, A4.3, A4.6 |
| Students will apply basic fabrication, design and styling techniques (for example, measuring, cutting, drilling, fastening, sanding, mixing) to complete simple hands-on tasks while following established safety rules, signage and PPE requirements. Emphasis will be placed on responsible tool use, proper posture and accuracy. | A2.4, A2.6, A2.7, A4.1, A4.3 |
| Students will document their fabrication process using appropriate technical terminology and reflect on how safe practices and attention to detail contribute to product quality, efficiency and sustainability. | A1.4, A2.6, A3.1, A3.5, A4.4 |
| Students will explore how safety standards and workplace procedures support long-term health, environmental responsibility and professional practice in skilled trades and technology-related careers. | B1.2, B3.1 |

## Cluster 2: Precision in Fabrication

**Approximate time for completion: 10 hours**

Students will develop the skills in measuring, marking and creating components with accuracy while following plans and quality standards.

### Topics and Expectations

- Design Processes and Related Skills: A1.1, A1.2, A1.4, A1.5, A1.6, A2.1, A2.3, A2.4, A2.5, A2.6, A2.7, A3.1, A3.2, A3.3, A3.4, A3.5, A4.3
- Technological Development, Impacts, and Careers: B1.2, B2.1

| Skills and Connections | Specific Expectations |
|---|---|
| Students will develop proficiency in precise measurement, marking and layout techniques using industry-appropriate tools. Students will select appropriate units and tolerances to ensure components or parts meet design specifications for the final product. | A1.2, A1.5, A2.4, A2.7, A3.2, A4.3 |
| Students will follow detailed, instructor-provided instructions to create components, documenting each stage of development and noting any modifications. Emphasis will be placed on interpreting instructions, sequencing steps and maintaining consistency across multiple measurements. | A1.4, A1.6, A2.1, A2.5, A2.6, A3.1 |
| Students will evaluate the quality and performance of their components using basic quality-control methods and identify sources of error and areas for improvement. Through reflection, students will consider how materials, tools, methods or processes will influence performance, sustainability and the social and environmental impact of their work. | A1.1, A2.3, A3.3, A3.4, A3.5, B1.2, B2.1 |

## Cluster 3: Product, Assemble, Refine

**Approximate time for completion: 10 hours**

Students will apply fabrication, assembly and problem-solving skills to create functional products or prototypes, refining designs iteratively and collaborating with peers.

### Topics and Expectations

- Design Processes and Related Skills: A1.2, A1.4, A1.6, A2.1, A2.3, A2.4, A2.5, A2.6, A2.7, A3.1, A3.2, A3.3, A3.5, A4.3, A4.4, A4.6
- Technological Development, Impacts, and Careers: B1.2, B2.1

| Skills and Connections | Specific Expectations |
|---|---|
| Students will identify and demonstrate appropriate fabrication techniques and tool use. Through guided practice, students will learn how to select and handle tools safely, prepare materials and follow procedures to produce accurate and functional products or prototypes. | A1.2, A2.4, A2.6, A4.3 |
| Students will apply iterative problem solving and testing to improve designs. Emphasis will be placed on evaluating performance, enhancing durability and documenting changes to improve overall product quality. | A1.4, A2.1, A2.5, A3.1, A3.5 |
| Students will collaborate effectively in teams to plan, design and build projects. They will practise communication, task management and share responsibility for safety, quality and project outcomes. | A1.6, A2.3, A2.7, A3.2, A4.6 |
| Students will reflect on the social, environmental and ethical impacts of design choices and materials. They will connect technical skills to real-world applications and explore how professional standards, craftsmanship and responsible practices contribute to success. | A3.3, A4.4, B1.2, B2.1 |

# Cycle 4: Final Design Project and Communication

**Approximate time for completion: 15 hours**

Project Documentation and Communication is a central focus in TAS2O as it allows students to apply their technical skills, research and problem-solving abilities in meaningful, real-world contexts. Through design projects, students will follow the engineering design process to plan, create, test and refine solutions, while documenting their thinking and progress. Students might use this process to plan a recipe, design a hairstyle, build a digital project or create a prototype, all of which involve problem solving, testing and refining ideas. Emphasis on communication helps students clearly share ideas, designs and reflections using sketches, models, digital tools and presentations. This focus builds collaboration, organization and professional communication skills that are essential for success in technology-based pathways, workplaces and everyday life.

## Cluster 1: Documenting the Engineering Design Process

**Approximate time for completion: 5 hours**

Students will record planning, research, design ideas and progress using journals, sketches, diagrams and digital tools while following the engineering design process.

### Topics and Expectations

- Design Processes and Related Skills: A1.1, A2.1, A2.5, A3.1, A3.3, A3.4, A4.4
- Technological Development, Impacts, and Careers: B1.1, B1.2, B3.1

| Skills and Connections | Specific Expectations |
|---|---|
| Students will create a detailed record of the steps taken in their project, including research, planning, prototyping, testing and refinement. | A1.1, A2.1, A3.1 |
| Students will apply technical vocabulary and visual documentation to communicate their process. | A3.3, A4.4 |
| Students will identify challenges they encountered during the project and explain the strategies they used to address them (including the use of digital or AI-assisted tools to explore possible solutions). | A2.5, A3.4, B1.2 |
| Students will connect their project documentation to larger technological ideas, including ethical, social and environmental impacts. | B1.1, B3.1 |

## Cluster 2: Presenting Your Work

**Approximate time for completion: 5 hours**

Students will clearly communicate project ideas, design decisions and final outcomes through oral, visual or multimedia presentations.

### Topics and Expectations

- Design Processes and Related Skills: A1.4, A2.5, A2.6, A3.1, A3.3, A3.4, A3.5
- Technological Development, Impacts, and Careers: B1.1

| Skills and Connections | Specific Expectations |
|---|---|
| Students will communicate design ideas, challenges and outcomes to different audiences, adapting their language and explanations as needed. | A1.4, A3.5, B1.1 |
| Students will communicate project-related challenges, performance analysis and refinements to their work. | A3.1, A3.3, A3.4, A3.5 |
| Students will communicate design ideas for various purposes and audiences using appropriate industry-standard formats. | A1.4, A2.5, A2.6 |

## Cluster 3: What Worked, What Didn't, What's Next

**Approximate time for completion: 5 hours**

Students will reflect on project results to evaluate successes, challenges and improvements. They will identify next steps for future designs or applications.

### Topics and Expectations

- Design Processes and Related Skills: A3.1, A3.3, A3.4, A3.5
- Technological Development, Impacts, and Careers: B3.4

| Skills and Connections | Specific Expectations |
|---|---|
| Students will identify challenges they encountered in the engineering design process. Students will apply critical thinking skills to explain how they addressed challenges to minimize recurrence. | A3.1, A3.5 |
| Students will collect data and feedback on their process and product and propose refinements for a future iteration of their work. | A3.1, A3.3, A3.4 |
| Students will evaluate the transferable skills they developed during a project and connect their outcomes to future careers. | B3.4 |

# Appendix I: Vertical Scan

**Cycle 1: Technology, Society and Sustainability**

1. Technology Impact Case Study
2. Sustainable Redesign Challenge
3. Technology Choices and Consumer Awareness Reflection

**Cycle 2: Design Thinking, Problem Solving and Planning**

1. Empathy-Based Design
2. Speaking the Lingo
3. From Idea to Plan

**Cycle 3: Technical Skills, Tools and Fabrication**

1. Responsible Tool Operation
2. Precision in Fabrication
3. Product, Assemble, Refine

**Cycle 4: Final Design Project and Communication**

1. Documenting the Engineering Design Process
2. Presenting Your Work
3. What Worked, What Didn't, What's Next

# Appendix II: Examples of Applying Cycles to Specific BBTs

## Cycle 1: Technology, Society and Sustainability

| | Cluster 1: Technology Impact Case Study | Cluster 2: Sustainable Redesign Challenge | Cluster 3: Technology Choices and Consumer Awareness Reflection |
|---|---|---|---|
| TGJ Communication Technology | Students will investigate the use of AI in graphic design careers. | Students will consider the impact of printing (large format or large quantity). | Students will analyze subscription model vs. one-time software purchases. |
| TEJ Computer Technology | Students will understand the "right to repair" laws. | Students will evaluate e-waste and tech recycling, considering planned obsolescence. | Students will research chip shortages and trends in hardware (GPU, RAM prices). |
| TCJ Construction Technology | Students will investigate the environmental impact of building materials. | Students will redesign a small structure using more energy-efficient materials (tiny homes). | Students will reflect on cost vs. sustainability in construction material choices. |
| THJ Green Industries | Students will explore whether small scale hydroponic farming can support nutritious food choices in northern communities. | Students will redesign a small hydroponic system to reduce energy/water use and use automation to reduce resources and maximize crop yield. | Students will compare consumer demand for organic vs. conventional vs. local produce and its environmental impact. |
| TXJ Hairstyling and Aesthetics | Students will use light and laser applications (from curriculum), explore advances in hair removal and medical services and investigate the use of AI salon services. | Students will redesign product packaging, explore mannequin reuse options and investigate recycling hair and other materials used in the salon (for example, colour, foils, products). | Students will investigate the benefits and drawbacks of eco-friendly hair or esthetic products. |
| TPJ Health Care Technology | Students will explore the use of drones to support healthcare in remote communities. | Students will design a low-cost portable first aid kit. | Students will evaluate accessibility vs. cost of high-tech medical solutions. |
| TFJ Hospitality and Tourism | Students will explore the impact of gig economy services (for example, food delivery apps like Uber Eats). | Students will design strategies to reduce single-use plastics. | Students will research a career in sustainable tourism or farm-to-table chef, investigating their education pathways and how they reduce the carbon footprint of the food supply chain. |

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|---|---|---|---|
| TMJ Manu-facturing Technology | Students will explore ways factories reduce waste and improve efficiency. | Students will design workspaces that reduce strain and injury (ergonomics). | Students will reflect on how manufacturing choices affect the environment. |
| TDJ Technolog-ical Design | Students will investigate design choices and their effect on the environment. | Students will redesign a product using sustainable prototyping materials (3D design, 3D printing, modelling). | Students will evaluate material choices in prototyping (for example, cardboard, 3D printing) and consider their sustainability and suitability for different stages of design. |
| TTJ Trans-portation Technology | Students will investigate EV policy changes and tariffs on materials and products. | Students will compare lithium-ion and fossil-fuel technologies. | Students will reflect on lithium-ion vs. fossil fuel transportation choices. |

## Cycle 2: Design Thinking, Problem Solving and Planning

| | **Cluster 1: Empathy-Based Design** | **Cluster 2: Speaking the Lingo** | **Cluster 3: From Idea to Plan** |
|---|---|---|---|
| TGJ Commu-nications Technology | Students will create high contrast visuals for accessibility. | Students will format files using JPG, PNG, PSD, RAW and resolution and record what they did using correct terminology. | Students will use storyboarding, wireframing, sketching and dope sheets to formulate a plan. |
| TEJ Computer Technology | Students will consider, use and develop assistive technology (adaptive controllers). | Students will identify cable/port names (HDMI, USB). | Students will use and develop flowcharts for troubleshooting. |
| TCJ Construc-tion Technology | Students will design spaces that are safe and accessible for all users. | Students will develop and read blueprinting for electrical/plumbing rough-ins. | Students will create a basic plan showing measurements and layouts. |
| THJ Green Industries | Students will design and build a community garden. | Students will learn, understand and use industry terminology. | Students will use blueprints to create layouts and execute prototypes. |
| TXJ Hairstyling and Aesthetics | Students will design an adaptive device for an esthetician or hairstylist suffering from carpal tunnel syndrome. | Students will develop the fundamental skills needed for client consultations, mood boards and portfolios. | Students will develop a themed makeover, learn special FX makeup and/or design a “green” product. |

| | | | |
|---|---|---|---|
| TPJ Health Care Technology | Students will design an adaptive device to support a person with limited mobility to live more independently. | Students will develop an understanding of medical/ assistive device terminology (prosthetics, adaptive utensils). | Students will plan care using triage principles and document their learning. |
| TFJ Hospitality and Tourism | Students will create a themed experience for a customer. | Students will use industry terms (menu items, service roles). | Students will prepare a list for specific services. |
| TMJ Manu-facturing Technology | Students will prototype ergonomic workspaces that are safe and comfortable. | Students will learn proper machine names and manufacturing terms. | Students will plan production steps using diagrams (checklists). |
| TDJ Technolog-ical Design | Students will design products with the user in mind (for example, age). | Students will learn design terms such as prototype, scale and materials. | Students will create sketches and design briefs. |
| TTJ Trans-portation Technology | Students will design transportation solutions that meet user needs. | Students will learn and understand vehicle parts and system terms. | Students will plan repair or maintenance steps and document their findings. |

## Cycle 3: Technical Skills, Tools and Fabrication

| | **Cluster 1: Responsible Tool Operation** | **Cluster 2: Precision in Fabrication** | **Cluster 3: Product, Assemble, Refine** |
|---|---|---|---|
| TGJ Commu-nications Technology | Students will use studio lighting and practise fire safety and cable management. | Students will learn about framing, aspect ratio, resolution and proportions. | Students will understand detail-oriented editing (spot fix, audio levels). |
| TEJ Computer Technology | Students will identify anti-static safety (ESD) and fire hazards with short circuits. | Students will match specifications of hardware to software requirements. | Students will assemble a computer and troubleshoot BIOS/POST errors. |
| TCJ Construc-tion Technology | Students will demonstrate the safe operation of power tools. | Students will measure and cut materials accurately. | Students will build, refine and prototype a small structure. |
| THJ Green Industries | Students will demonstrate the safe use of greenhouse tools, pumps and systems. | Students will measure nutrient solutions, plant spacing and growth analysis. | Students will use environmental assessment data. |
| TXJ Hairstyling and Aesthetics | Students will identify infection prevention, sanitization techniques and ergonomics. | Students will demonstrate styling techniques and use of proper tools to achieve their desired service. | Students will demonstrate in detail, polishing techniques, styles based on face/head shapes. |

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| TPJ Health Care Technology | Students will understand biohazard/sharps instruments and proper handling techniques. | Students will measure "medications" and demonstrate adjusting prosthetics. | Students will document and prepare reports. |
| TFJ Hospitality and Tourism | Students will learn knife skills, refrigeration standards and safe food handling. | Students will measure using weight and mass in both imperial and metric systems. | Students will cook, plate, serve and refine dishes. |
| TMJ Manu-facturing Technology | Students will follow machine safety rules (using safe docs). | Students will machine and cut parts accurately to specifications. | Students will test and improve products |
| TDJ Technolog-ical Design | Students will use tools and machines safely. | Students will design and build models accurately using machine tolerances. | Students will refine designs after testing. |
| TTJ Trans-portation Technology | Students will use automotive tools safely. | Students will understand how various parts work to consider a new prototype. | Students will test and adjust systems or parts to improve their products/service. |

## Cycle 4: Project Documentation and Communication

| | **Cluster 1: Documenting the Engineering Design Process** | **Cluster 2: Presenting Your Work** | **Cluster 3: What Worked, What Didn't, What's Next** |
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| TGJ Commu-nications Technology | Students will create a behind the scenes (BTS) of a production. | Students will use online website portfolios. | Students will reflect on and critique their work and that of peers. |
| TEJ Computer Technology | Students will use code commenting and a README file for documentation. | Students will use a README file for hardware and software. | Students will conduct debugging and communicate fixes to a layperson using non-technical and technical terms. |
| TCJ Construc-tion Technology | Students will track work progress using checklists and following drawings. | Students will explain construction decisions and tools choices. | Students will reflect on the process used to create the build and its efficiency. |
| THJ Green Industries | Students will log plant growth and energy and water use. | Students will use a visual report (charts, photos, video). | Students will evaluate and document sustainability improvements. |
| TXJ Hairstyling and Aes-thetics | Students will create a plan, using images, samples and swatches as reference. | Students will take before-and-after photos for social media. | Students will use a consultation process and document the process to refine the next visit. |

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| TPJ Health Care Technology | Students will use a documentation process to record care plans. | Students will present a plan of care and a patient journal. | Students will reflect on consultations through follow-ups and peer assessment. |
| TFJ Hospitality and Tourism | Students will document HACCP logs and temperature checks. | Students will develop and present a theme and/or brand. | Students will reflect on service adjustments and create feedback forms. |
| TMJ Manu-facturing Technology | Students will create specification sheets and drawings. | Students will explain production steps (understanding how you got to this step or finished product). | Students will reflect on the process and final product, considering what could have been done differently and what they learned. |
| TDJ Technolog-ical Design | Students will build a design portfolio. | Students will communicate their design choices. | Students will gather and reflect on feedback to make revisions. |
| TTJ Trans-portation Technology | Students will document repairs and services (create work orders and document possible repairs). | Students will use invoices to explain repairs, labour and parts. | Students will reflect on the success of repairs and identify next steps. |

## Work Cited

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