

## **Construction Technology: *Building Accessibility Projects***

### **Empathy Development**

Students will learn about the physical limitations that seniors may face and the importance of accessible environments. By working on projects that directly impact seniors' mobility and safety, students will develop a deeper understanding of the necessity for inclusive design. This hands-on experience promotes empathy by highlighting the daily challenges seniors encounter and the impact of thoughtful construction.

### **Course Codes**

TAS 10/20    TCJ 3C/3E    TCJ 4C/4E    TWJ 3E/4E

Grade 7 & 8 | Mathematics - E1. Geometric and Spatial Reasoning, E2. Measurement

### **Possible Community Partners**

- ❖ Local Greenhouses
- ❖ Hardware Stores
- ❖ Construction Companies
- ❖ Municipal Accessibility Resources
- ❖ Habitat for Humanity

## Sample Lesson Plan

### Construction Technology: Building Accessibility Projects

#### Lesson Plan: Building Accessibility Projects

**Objective:** Students will design and construct small accessibility projects or improvements within the care home, like ramps or garden beds.

Students can also engage in virtual or real-world projects that involve designing senior-friendly living spaces. Students will foster empathy by understanding the physical limitations of seniors.

**Materials:** Design software, construction tools, materials (wood, nails, paint).

#### Activities:

- **Introduction (1 class):**
  - Discuss the importance of accessibility in public and private spaces and introduce basic construction techniques.
  - Introduce the principles of universal design.
- **Needs Assessment (1 class):**
  - **Tour:** Tour the facility with students and seniors to identify areas that need improvement.
  - **Challenges Discussion:** Discuss the challenges faced by seniors in those areas.
- **Design Phase (2-3 classes):**
  - Students work in groups to create designs for accessibility improvements (e.g., ramps, wider doorways).
  - Teacher reviews designs with a focus on feasibility and safety.
- **Construction Phase (4-5 classes):**
  - Students build their projects, ensuring they follow safety protocols.
  - Teacher guides students in building the accessibility improvements.
  - Involve seniors in the process, seeking their input and feedback.
- **Presentation and Evaluation (1-2 classes):**
  - Test the new improvements with seniors and gather their feedback.
  - Present completed projects to the care home and receive feedback.
  - Conduct a reflection session on the importance of accessibility.

**Assessment:**

- **Evaluate Designs:** Evaluate the designs and completed construction projects for functionality and safety.
- **Reflection Assessment:** Assess reflections on students' understanding and empathy.

**Empathy Development:** Students develop empathy by understanding the physical challenges seniors face and creating solutions to improve their mobility and independence.

**Worksheet****Construction Technology: Building Accessibility Projects****Student Worksheet****1. Project Planning:**

- Identify three safety considerations when building your project in the care home environment:
  - i. Safety Consideration 1: \_\_\_\_\_
  - ii. Safety Consideration 2: \_\_\_\_\_
  - iii. Safety Consideration 3: \_\_\_\_\_
- Sketch the initial design of your accessibility project. Label key features and materials needed.
- List potential challenges you anticipate during the construction phase. How will you address them?

**2. Construction Skills Practice:**

- List the materials and tools you will need to construct your project. Be specific.
- Practice using construction tools safely. Describe one tool you used and its purpose.
- What safety measures should be followed when working on a construction site?

**3. Team Collaboration:**

- Discuss your role within the project team. How will you contribute to its success?
- How will you communicate effectively with team members to ensure everyone is on the same page?

**4. Reflection:**

- Reflect on the progress of your accessibility project. What milestones have you achieved so far?
- What lessons have you learned about construction technology and project management through this experience?

## Guide for Long-Term Care Home Residents

### Construction Technology: Building Accessibility Projects

#### Guide for Long-Term Care Home Residents:

- 1. Understanding Accessibility Needs:**
  - Participate in discussions about accessibility challenges faced by seniors.
  - Provide insights into areas where accessibility improvements are needed.
- 2. Observation and Input:**
  - Observe and offer feedback on project plans and designs created by students.
  - Share your perspective on the usability and practicality of proposed solutions.
- 3. Participation in Construction:**
  - Engage in safe and supervised activities related to construction projects.
  - Assist with tasks that match your abilities and interests.
- 4. Celebration of Completion:**
  - Attend the unveiling and use of accessibility solutions created by students.
  - Appreciate the improved accessibility in community spaces.

## Reflection - What, So What, Now What?

The [Reflection Choice Board](#) can be used at any time as an individual, small group, or whole class reflection strategy.

Additional routines that would work well for this project:

- [Journaling](#) throughout the project
- [Reflection Bingo](#) for mid-way check-ins
- [Later Letter](#) as a final whole-group reflection and debrief

## Reflection - Assessment AS Learning

### Construction Technology: Building Accessibility Projects

#### Reflection Worksheet

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1. Describe the accessibility project you worked on. What was its primary objective?  
\_\_\_\_\_  
\_\_\_\_\_
2. What were the key challenges in designing and constructing the accessibility features?  
\_\_\_\_\_  
\_\_\_\_\_
3. How did you ensure that the project met safety and compliance standards?  
\_\_\_\_\_  
\_\_\_\_\_
4. What skills did you develop through working on this project?  
\_\_\_\_\_  
\_\_\_\_\_
5. Reflect on the impact of the project on the seniors. How do you think it improved their daily lives?  
\_\_\_\_\_  
\_\_\_\_\_
6. How did this project increase your awareness of the importance of accessibility in construction?  
\_\_\_\_\_  
\_\_\_\_\_
7. If you were to do this project again, what changes would you make?  
\_\_\_\_\_  
\_\_\_\_\_
8. Overall, how do you feel about the final outcome of the project? Why?  
\_\_\_\_\_  
\_\_\_\_\_

## Ideas for Next Steps

- **Create a time-lapse video chronicling the construction and installation of the accessibility product**
- **Testimonials from long-term care residents about the impact the accessibility project**
- **Partnering with the Life-Skills program at the school to determine if they have any accessibility needs that could be addressed in a similar way**
- **Pathways Considerations:**
  - **Specialist High Skills Major (SHSM)** - Provide students with information on a *Construction* SHSM if applicable.
  - **Dual Credit** - Explore the possibility of related courses at a local post-secondary institution (e.g. construction applications, cabinetry, general carpenter, etc.)
  - **Co-Operative Education** - If students enjoyed this process, encourage them to investigate a co-op in a long-term care home, a business that focuses on construction trades, or in a pathway/field they are considering pursuing post-secondary
  - **Field Trip** - Take the students that participated in this activity to visit a community partner to learn more about Construction. One example of this could be to visit a local greenhouse/gardening centre to learn about the principles of landscaping and how a project develops from start to finish.
  - **Online Career and Individual Pathways Plan (IPP) Tools** - Use the IPP software your school board has licensed (myBlueprint, Xello, etc.) to explore post-secondary options that suit your skills, interests and future plan that are a natural extension of this project.
  - **Skilled Trades** - Encourage career exploration of Skilled Trades that connect to the *Construction* BBT, such as:
    - Cement (Concrete) Finisher
    - Construction Boilermaker
    - Powerline Technician
    - Sheet Metal Worker
- **[UN Sustainable Development Goals \(SDGs\)](#)** - Consider having students complete a parallel project to raise awareness around and promote the action for the SDG of their choice. For this project, [Goal 10: Reduced Inequalities](#) fits well.
- **[TCJ10: Tools for measuring](#)** (from octe.ca) - exploring construction technology
- **[TCJ10/20: Wood Joint Box](#)** (from octe.ca) - This project focuses on the trades of cabinetmaking and carpentry. In both fields, basic level apprenticeship training requires the development of proficient hand tool techniques. This project focuses solely on hand tools in order to learn about and layout and cut four different wood joints.
- **[STEM TakeTech Challenge Kit - Construction](#)** (Gr. 7 & 8)

Sample Rubric

**Construction Technology: Building Accessibility Projects**

Rubric:

<b>Criteria</b>	<b>Excellent (Level 4)</b>	<b>Good (Level 3)</b>	<b>Satisfactory (Level 2)</b>	<b>Needs Improvement (Level 1)</b>
<b>Needs Assessment</b>	Thorough and insightful assessment of accessibility needs.	Good assessment of accessibility needs.	Basic assessment of accessibility needs.	Incomplete or inaccurate assessment of accessibility needs.
<b>Design Quality</b>	Designs are highly innovative, functional, and feasible.	Designs are functional and feasible.	Designs are somewhat functional but may lack feasibility.	Designs are poorly thought out and unfeasible.
<b>Construction Skills</b>	Demonstrates excellent construction skills and attention to detail.	Demonstrates good construction skills and attention to detail.	Demonstrates basic construction skills, with some errors.	Demonstrates poor construction skills with many errors.
<b>Safety and Compliance</b>	Adheres strictly to safety and	Mostly adheres to safety and	Partially adheres to safety and	Poor adherence to safety and

	accessibility standards.	accessibility standards.	accessibility standards.	accessibility standards.
<b>Empathy and Understanding</b>	Shows deep empathy and understanding of seniors' mobility challenges.	Shows good empathy and understanding of seniors' mobility challenges.	Shows some empathy and understanding of seniors' mobility challenges.	Lacks empathy and understanding of seniors' mobility challenges.
<b>Reflection Quality</b>	Reflection is insightful and deeply connected to the experience.	Reflection is thoughtful and connected to the experience.	Reflection shows some connection to the experience.	Reflection is shallow and disconnected from the experience.

<p><b>Teacher Observation Checklist</b></p> <hr/> <p><b>Construction Technology: Building Accessibility Projects</b></p> <p><b>Teacher Observation Checklist</b></p> <ul style="list-style-type: none"> <li>● <b>Needs Assessment</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Students conduct thorough assessments of accessibility needs.</li> <li><input type="checkbox"/> Assessments show insight into the challenges faced by seniors.</li> </ul> </li> <li>● <b>Design Quality</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Designs are innovative and functional.</li> <li><input type="checkbox"/> Designs demonstrate a strong understanding of accessibility.</li> </ul> </li> <li>● <b>Construction Skills</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Students show excellent construction skills.</li> <li><input type="checkbox"/> Attention to detail is evident in the work produced.</li> </ul> </li> <li>● <b>Safety and Compliance</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Projects adhere strictly to safety standards.</li> <li><input type="checkbox"/> Projects meet all accessibility compliance requirements.</li> </ul> </li> <li>● <b>Empathy and Understanding</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Students show empathy towards the mobility challenges of seniors.</li> <li><input type="checkbox"/> Students create solutions that address seniors' needs effectively.</li> </ul> </li> </ul>
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- **Reflection Quality**

- Students provide insightful reflections on their experience.
- Reflections highlight the importance of accessibility.

### **Teacher Comment Bank**

- **Strengths:**

- Your project design was thoughtful, addressing key accessibility needs with precision and creativity.
- You demonstrated excellent construction skills, ensuring safety protocols were followed throughout the process.
- Collaboration within your team was effective, contributing to the successful completion of the project.

- **Areas for Improvement:**

- Consider conducting thorough research to explore additional innovative solutions for accessibility.
- Continue to refine your project management skills to optimize planning and execution timelines.
- Reflect on challenges faced during construction and identify strategies for improvement in future projects.