



# Learning WITH LEONG

Thank you for using our teacher materials for teaching 21<sup>st</sup> century skills. For this project, we have used [ACARA](#)'s general capabilities continuum for "[Critical and Creative Thinking](#)" and "[Personal and Social](#)" as a guide and inspiration.

Our focus for the materials that follow is on the specific skill of "**Innovation.**"

Here, we try to provide straightforward material that can be used by educators to help make it easier to incorporate 21<sup>st</sup> century skills into units of study. The materials can be used as-is or altered to fit what works best for the intended audience. This document contains four parts...

1. **Lesson Planning: Questions for Consideration** - These questions are intended to prompt educators to think about the different ways they can incorporate this particular 21C skill into their lessons. The questions are not meant to be prescriptive in any way, nor is it intended that all of them would be applicable to every unit of study. They serve to simply offer ideas for consideration. These questions could be used by individual teachers interested in developing their lessons further, in department meetings to collectively brainstorm ways their specific subject matter could work to incorporate the 4Cs, or during professional development to support teams of teachers during their planning of units of study.
2. **Student Reflection Guide** – This section is intended for use directly with students as a way to help them become more aware of the ways in which they use various 21C skills and to contemplate the ways in which they can strengthen these skills. The guides are designed with the understanding that many of these skills can only be built through application and that metacognitive reflection helps to accelerate the acquisition of these skills. There are three pages for this section. First, a handout for students to complete at the beginning of a unit/project. Second, a check-in giving the students a chance to reflect and for the student or teacher to make some adjustments, perhaps, before the end of a unit of study. Third, a final reflection on the experience as it pertains to this particular 21C topic of focus. As with all of the materials, the expertise of the teacher would determine whether the guides are best used as-is or just in parts and can also be altered to fit the needs of the individual classroom.
3. **Character Analysis** – This section provides a list of questions to be used to examine and reflect on a person's or character's life as it relates to this particular 21C topic. The questions provide a lens through which to view that person's actions. Some examples of how to use them might be to ask students to apply them to the actions of a particular person in history, the professional trajectory of a scientist, the life of a famous artist/athlete/writer, or a character in a novel. They could be used for group discussion or

to produce presentations or essays. The questions can also be applied directly to the student's life, if desired. The hope is that through reflecting on the life of another person and how they demonstrated a particular 21C skill that the students will gain insight into the ways in which these skills impact people and can, perhaps, apply that to their own life as well.

4. **Standards** – In this section, we listed the standards that apply to this particular 21C skill. Specifically, elements from ACARA's continuums that apply to this particular topic are listed with a focus predominantly on Level 6 in the continuum. In addition, standards from several other organizations around the world are also included in order to offer educators more insight as to how 21C skills are discussed and to serve as a resource as they work to incorporate these skills into the curriculum. For more insight to these organizations, please refer to "[21<sup>st</sup> Century Skills – Resources for Educators](#)."

We hope that the resources are useful to you!

## **Lesson Planning**

### **21 Century Capability: Innovation**

#### **Questions for Consideration:**

1. Are students asked to research what is already known and/or already exists?
2. Are students asked to brainstorm/research what needs to be known and/or is needed (in the discipline of study, in the community, for a target audience, etc.)?
3. Are there opportunities for students to learn from experts in the field of study so as to understand the latest developments and needs?
4. Are students asked to brainstorm how they might build on ideas/products/solutions that already exist?
5. Are students encouraged to experiment?
6. Are there opportunities for students to participate in the iterative process of innovating through failure, reflection, and revision?
7. Is technology used in ways that help students to generate ideas and/or to help with the iterative process of design?
8. Is collaboration encouraged and fostered as an important tool for generating ideas and through all steps in the design process?

## Student Reflection Guide - Anticipatory

### 21 Century Capability: Innovation

In this unit/lesson/project, we are going to be learning to/about \_\_\_\_\_.  
(circle one) (circle one)

Before we begin, please write about what you know about this topic already.

What questions could we ask about this topic that would help us know more about the current knowledge/products/solutions that exist?

What resources could we use to learn more? (i.e. types of websites, publications, professionals, target audience) Be as specific as possible.

What ideas do you already have about what you might try to learn more about or try to create?

**Student Reflection Guide – Check In**

**21 Century Capability: Innovation**

In this unit/lesson/project, we are learning to/about \_\_\_\_\_.  
(circle one) (circle one)

Please write about what you know about this topic so far.

So far, what steps have you taken to acquire more knowledge?

What ideas have you had about what type of new information/product/solution you might try to work on? Include ideas that you have already dismissed and ones you are still considering.

Who have you talked to about your ideas?

What do you think you need to do next?

## Student Reflection Guide - Final

### 21 Century Capability: Innovation

In this unit/lesson/project, we learned to/about \_\_\_\_\_.  
(circle one) (circle one)

Please write about what you know about this topic now.

Over the course of this unit/lesson/project, who did you collaborate with?

What were the benefits/contributions from that collaboration?

Summarize the range of ideas you explored during this unit/lesson/project. What was the simplest? Most complex? Most realistic? Most outlandish?

What did you end up working to add to the field or to create? How do you feel about this work overall?

## Character Analysis

### 21 Century Capability: Innovation

#### Questions for Analysis:

1. Do you think this person was innovative? Why or why not?
2. In what ways was innovation challenging for this person?
3. What new ideas did this person contribute to their field/the world?
4. What new products/solutions did this person come up with?
5. How did this person go about learning about their area of focus?
6. What role did collaboration play in this person's efforts?
7. What ideas did this person have that never came to fruition? Or that failed to accomplish the set goal?
8. How did this person's skills in innovation help them to...
  - a. accomplish their goal?
  - b. realize their dream?
  - c. overcome an obstacle?
9. What did you learn about the process of innovation from learning about this person?

## Standards

### 21 Century Capability: Innovation

#### ACARA v.8.4

##### CRITICAL AND CREATIVE THINKING

Consider alternatives

6 - speculate on creative options to modify ideas when circumstances change

Seek solutions and put ideas into action

6 - assess risks and explain contingencies, taking account of a range of perspectives, when seeking solutions and putting complex ideas into action

#### ACARA v.9

##### CRITICAL AND CREATIVE THINKING

Create possibilities

6 - create possibilities by connecting or adapting complex ideas and proposing innovative and detailed variations or combinations

Consider Alternatives

6 - consider alternatives by creatively revising and modifying ideas and recommendations when circumstances change

#### P21

##### CREATIVITY AND INNOVATION

Think Creatively - Create new and worthwhile ideas (both incremental and radical concepts).

Work Creatively with Others - Demonstrate originality and inventiveness in work and understand the real-world limits to adopting new ideas

#### C21 Canada

##### CREATIVITY, INNOVATION AND ENTREPRENEURSHIP

3 - Learners engage their intrinsic interests, creativity and entrepreneurship skills that will help them thrive in future life and work.

##### CRITICAL THINKING

3 - Learners take action and formulate creative solutions for authentic use in real world problem solving relating economic, financial, environmental and social contexts.

#### ISTE

1.4. Innovative Designer - Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions. Students:

1.4.a. know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

1.4.b. select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

1.4.c. develop, test and refine prototypes as part of a cyclical design process.

## **AAC&U**

### **CREATIVE THINKING**

**Innovative Thinking:** Extends a novel or unique idea, question, format, or product to create new knowledge or knowledge that crosses boundaries.

**Connecting, Synthesizing, Transforming:** Transforms ideas or solutions into entirely new forms.

### **FOUNDATIONS AND SKILLS FOR LIFELONG LEARNING**

**Transfer:** Makes explicit references to previous learning and applies in an innovative (new and creative) way that knowledge and those skills to demonstrate comprehension and performance in novel situations.

### **INTEGRATIVE LEARNING**

**Transfer:** Independently adapts and applies skills, abilities, theories, or methodologies gained in one situation to new situations to solve difficult problems or explore complex issues in original ways.