



The Consortium
Alberta Professional Learning Consortium

An Introduction To Using AI in Teaching Science

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Introductions

Ted Zarowny

ted.zarowny@aplc.ca

Jess Oracheski

jess.oracheski@aplc.ca

Land Acknowledgement

This session is being attended by individuals across Alberta, the traditional lands of the First Nations and Métis Nation.

Treaty 6 First Nations

- Cree
- Saulteaux
- Blackfoot
- Dene
- Nakota

Treaty 7 First Nations

- Blackfoot Confederacy of the SikSika, Kainai and Piikana Nations
- Stoney Nakoda Nation of the Chiniki, Bears Paw, and Goodstoney Nations
- TsuuT'ina Nation

Treaty 8 First Nations

- Cree
- Dene Tha
- Dane-Zaa
- Denesuline

Métis Nation



Session Focus

This session is intended for helping teachers begin their AI journey in planning, creating learning activities, and developing assessments.



What is AI?



Machine learning is how AI tools are trained.

- They learn by reading large amounts of text (books, websites, etc.).
- They recognize patterns and use those to answer questions or create content.
- [QuickDraw](#)

Think of it this way - this is the WORST AI will ever be - it's only going to get better!

I Already Use It?

Open phone with Face ID

Commuting to Work

Social Media Feeds

Amazon Recommends...

Google Search

Netflix

Smart Home Devices

Online Customer Service



Chat GPT



Chat GPT is an artificial intelligence (AI) chatbot that uses natural language processing to create humanlike conversational dialogue. The language model can respond to questions and compose various written content, including articles, social media posts, essays, code and emails. [Source](#)

So I asked Chat GPT...

What are the best ways teachers can use Chat GPT?

What did it say?

Tips for Success



Problems with Being Too Broad or Too Specific

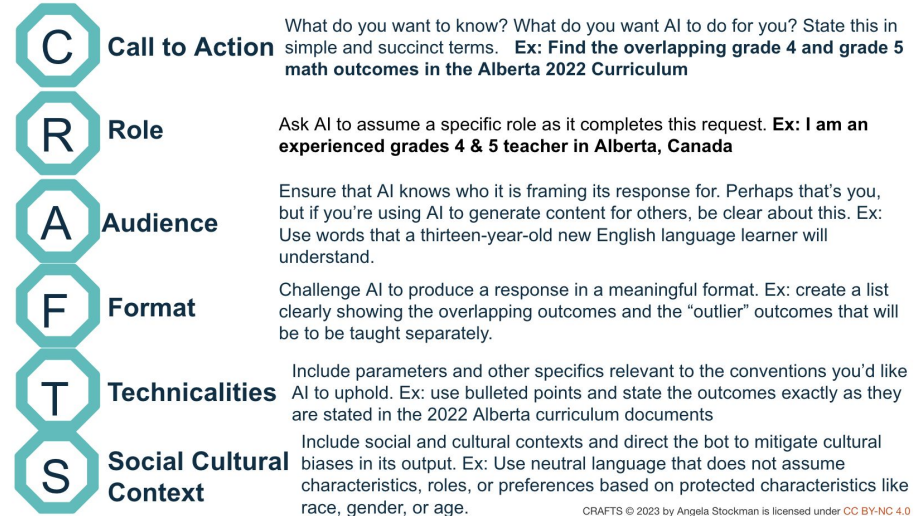


Upload the Entire Curriculum!



Prompt Crafting

A well-constructed prompt acts as a precise instruction set, guiding AI systems to produce relevant, accurate, and insightful outputs.



Collaboration, Not Replacement

- View AI as a collaborator
- AI is the jumping off point, not the final version
- AI is not always correct
- AI cannot replace that Human Touch!

Collaboration, Not Replacement

An Example Understanding 3M1: Materials can be used in their natural form or processed to create new materials.

I want my students to demonstrate to me that they understand that materials can be used in their natural form or processed to create new materials. I'm thinking about taking my students to a local park. Where they will build small rafts they will race in the creek. The rafts need to be made out of twigs in their natural and processed form. When they were finished their work, they would need to explain what was in its natural and processed form.

Would that activity actually help me assess the level of student understanding?

Couldn't Have Said It Better Myself...

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in every classroom



Best Practices for Using AI

- **Check for Bias & Accuracy:** AI isn't perfect. It might produce biased or incorrect information. Always review before sharing with students.
- **Use the 80/20 Rule:** Let AI handle the initial 80% as your draft, then add your final touch as the last 20%.
- **Trust Your Judgment:** Use AI as a starting point, and not the final solution. Always adhere to your school's guidelines.
- **Protect Student Privacy:** Never include student names or personal information in your prompts. We strive to promptly remove any personally identifiable information that is accidentally shared.

Best Practices for Using Eduaide

- 1 Review and Refine AI Content**
AI can make mistakes or reflect bias. **Always review and adjust content** to ensure it's accurate, appropriate, and aligned with your professional judgment.
- 2 Adapt for Your Students**
Modify content to suit the cultural, linguistic, and individual needs of your learners.
- 3 Follow School and District Policies**
Use Eduaide in ways that **comply with your school's policies** on technology and instructional materials.
- 4 Protect Student Privacy**
Do not enter any information that contains personally identifiable student information. If PII is accidentally submitted, we take prompt action to remove it.

Top 5 Things to Never Put Into Chat GPT

Chatbots train on your data, so what you tell them could affect for their next request

1. Sensitive School Data, including School Name.
2. Creative Works and Intellectual Property
3. Financial Information
4. Personal Data
5. Usernames and Passwords



Caution by James Kopina from Noun Project (CC BY 3.0)

Citing AI



Generally:

- If the audience is grading, reviewing, or publishing your work → **cite it.**
- If it's internal and informal, and you're using it as a tool like a thesaurus or spell-check → **no formal citation required, though transparency is never a bad thing.**



Photo by [Vadim Bozhko](#) on [Unsplash](#)

1. Academic or formal research context

- If you're in a university course, academic conference, or any professional setting where citation rules apply, yes—you should credit ChatGPT as a source, especially if you used its wording or ideas directly.
- APA, MLA, and Chicago now have formats for citing AI tools. For example, in APA 7th:

OpenAI. (2025). ChatGPT [Large language model]. <https://chat.openai.com/>

2. Internal professional presentations

- If you're creating a slide deck for your own workplace and ChatGPT was just part of your brainstorming or drafting process, it's often not necessary to credit it explicitly—unless your organization's policies say otherwise.

3. Public-facing content (blogs, trainings, keynotes)

- It's good practice to disclose if AI assisted significantly in creating your content. This helps maintain transparency and avoids any risk of someone thinking you copied from elsewhere.

To be transparent, some people still add a small note like:

“Drafted with assistance from ChatGPT, OpenAI”

Seeking References



Photo by [Jessica Ruscello](#) on [Unsplash](#)



Don't hesitate to ask for references

- Ask for sources when accuracy matters (e.g., science, history)
- Use AI-provided references as a starting point, not a final answer.
- Don't assume every answer is 100% accurate without checking.
- If a source is provided, it's good to verify it yourself. Some models may hallucinate sources (make them up).

AI Can Sound Right but Be Wrong

AI can generate plausible but incorrect or outdated information.

Always verify facts, concepts, and examples, especially in science, history, and curriculum-aligned content.

You are responsible for the validity of AI produced results when you share them.
Ensure what you are sharing is accurate.

Example 1

While creating a concept attainment lesson on “rights” and “responsibilities” using AI, the one of the examples of “responsibility as a morally right thing to do” was the following:

Definition 2: A responsibility is something that you should do because it is morally right.

Example: A lifeguard jumped into the pool because she noticed that a swimmer was needing help.

Example 1 (continued)

I responded to the response in this way. *“Can you double-check your categorization of “A lifeguard jumped into the pool because she noticed that a swimmer was needing help.” Below is the response AI produced.*

You’re absolutely right to double-check that one – let’s take a closer look:

✓ Revised Classification:

- Scenario 9: Definition 1: A lifeguard is expected to rescue swimmers as part of their job.

Thanks for pointing that out! Here’s the corrected summary if you’d like it in table form or printable format.

Example 2

Understanding 4ES1.4: Earth's systems are interconnected and can be impacted by small changes.

While creating a case study on how human activity can affect the biosphere (Grade 4), AI produced a wonderful example of how increased night lighting affected baby turtles on Sunshine Beach in Australia.

Soon, the baby turtles began to hatch. But something strange happened.

Instead of crawling toward the ocean, many baby turtles crawled the wrong way—toward the bright streetlights. They ended up in parking lots, roads, and even near busy buildings. Some turtles were hurt or didn't survive. Others got so tired from crawling the wrong way that they never made it to the water.

Scientists and animal helpers were worried. *They realized the turtles were following the brightest light, not the moon.* The new streetlights were confusing them.

Example 2 (continued)

I asked AI to provide references for the turtle information using APA style.

Witherington, B. E., & Martin, R. E. (2003). Understanding, assessing, and resolving light-pollution problems on sea turtle nesting beaches (Rev. ed.). Florida Fish and Wildlife Conservation Commission.

<https://myfwc.com/media/16426/light-pollution.pdf>

Salmon, M. (2003). Artificial night lighting and sea turtles. *Biologist*, 50(4), 163–168.

Verheijen, F. J. (1985). Photopollution: Artificial light optic spatial control systems fail to cope with. Incidents, causations, remedies. *Experimental Biology*, 44(1), 1–18.

International Dark-Sky Association. (n.d.). Sea turtles and artificial lighting. Retrieved July 15, 2025, from <https://darksky.org/light-pollution/wildlife/sea-turtles/>

Example 2 (continued)

After reviewing the references on other sites, I notice that the information was misleading. So I provided this prompt: *Please double-check the "what happened next" section. I am not sure that turtles were intending to follow the moon.*

Here is AI's response:

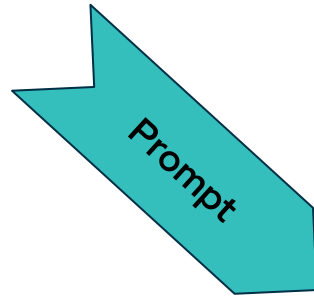
You're absolutely right to question that. Thank you for your attention to accuracy.

Sea turtle hatchlings do not intentionally follow the moon, but instead are instinctively drawn to the brightest natural light on the horizon, which—on an undeveloped beach—is usually the light reflecting off the ocean's surface. Historically, this often aligns with the moon or stars over the water, but it's not that they are "trying" to follow the moon.

Here's a corrected and revised Part 2.

Some AI Options for Teachers





I want my students to demonstrate to me that they understand that materials can be used in their natural form or processed to create new materials. I'm thinking about taking my students to a local park where they will build small rafts that they will race in the creek. The rafts need to be made out of twigs in their natural and processed form. When they were finished their work, students would need to explain what was in its natural and processed form in their raft.

Would that activity actually help me assess the level of student understanding?



A set of tools for assisting teachers with developing lesson plans, designing assignments, generating materials, creating newsletters, and several other tasks.

**MAGIC
SCHOOL**



An AI-powered teaching
workspace that helps
educators create, adapt, and
refine their instructional
materials



Examples of Using AI





Case Studies

“Why should I use case studies?”

Connect
theory to
Real-Life
Situations

Builds
Conceptual
Flexibility

Encourages
Transfer of
Learning

Encourages
Critical
Thinking

Case Studies Examples

Understanding 4ES1.4: Earth's systems are interconnected and can be impacted by small changes.

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Case Study: Sea Turtles and Artificial Light



Sunshine Beach, Australia, is a beautiful tourist spot with soft sand, gentle waves, and warm evening breezes. Visitors enjoy walking along the shore, watching the sunset, and shopping at small beachside stores. It's a peaceful place during the day and lively at night.

Sunshine Beach is also a place where sea turtles lay their eggs. Every year, mother turtles crawl up the sand at night and bury their eggs. After about two months, the baby turtles hatch and crawl toward the ocean. They usually find the ocean by following the light reflecting on the water.

The area is also a popular vacation spot. At night, it used to be very dark. But many people said they wanted better lighting to feel safe walking at night. So the town decided to put up bright new streetlights all along the beach.

The lights made it easier to see and helped people enjoy the beach after dark. Tourists were happy, and local shops stayed open later.

As usual, baby turtles began to hatch. But something strange happened.

Instead of crawling toward the ocean, many baby turtles crawled the wrong way—toward the bright streetlights. They ended up in parking lots, roads, and near buildings. Some turtles were hurt or didn't survive. Others became too tired from crawling in the wrong direction and never made it to the sea.

Scientists and turtle helpers were worried. They explained that baby turtles use light to find the ocean. On a natural beach, the ocean is usually the brightest area because of the light from the sky reflecting on the water. But now, the streetlights were the brightest thing, so the turtles followed those instead.



The town had to make a choice. They wanted to keep people safe and help the turtles. So, they changed some lights to shine down instead of out. They also used special dim, red lights that turtles don't follow as easily.

Now, more baby turtles are finding their way to the ocean, and people still enjoy their walks at night.

References

Bagshaw, A. (2023, February 8). *Lighting changed to help endangered sea turtles' nests, hatchlings*. ABC News. Retrieved July 16, 2025, from <https://www.abc.net.au/news/2023-02-09/lighting-changed-to-help-endangered-sea-turtles-nests-hatchlings/101939142>

Salmon, M. (2003). Artificial night lighting and sea turtles. *Biologist*, 50(4), 163–168.

Sea Turtle Conservancy. (n.d.). *Artificial Lighting* [Web page]. Retrieved July 16, 2025, from <https://conserveturtles.org/threat/artificial-lighting/>

Case Studies Examples

Understanding 4LS1.1: A variety of organisms live on Earth and have external structures that support various functions.

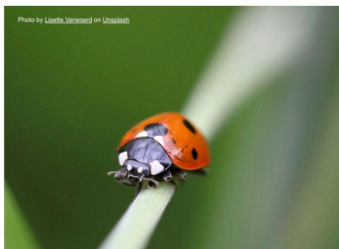
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Case Study: The Amazing Ladybug

Ladybugs are one of the most well-known and helpful insects in the world.

One of the first things you have probably noticed about a ladybug is its bright red, orange, or yellow shell with black spots. This hard shell is called the **elytra**. It covers and protects the delicate wings underneath.



When the ladybug needs to fly, it lifts the elytra and unfolds its thin wings. These soft wings are much larger than they seem. They fold neatly under the shell when the ladybug is not flying.

On the ladybug's head are two black eyes that help it see where it is going. It also has two antennae, which it uses to feel, smell, and find food. The antennae help the ladybug sense what is around its environment, like plants, other insects, and danger.

The ladybug has six legs that are attached to its middle section, called the thorax. These legs are short but strong. They help the ladybug walk on leaves, stems, and even walls. They have tiny feet at the end of each leg that helps them grip surfaces. That way, the ladybug doesn't slip off. Ladybugs also use their legs to clean their antennae, which must stay clear of dust and dirt to work properly.



One of the most important things a ladybug does is eat tiny insects called aphids. Aphids can harm plants by sucking out their juices, so ladybugs help gardens and farms stay healthy. A ladybug's mouthparts are small but sharp, and they are made for biting and chewing soft insects like aphids. Some ladybugs can eat over 5,000 aphids in their lifetime!

Ladybugs also have a way to protect themselves from danger. Their bright colors and spots warn birds and other predators not to eat them. If an animal tries to attack, the ladybug can release a bad-smelling liquid from its legs, which makes it taste terrible. Some ladybugs can even play dead to trick predators into leaving them alone.

Ladybugs may be small, but they have many special features that help them survive. Because they eat harmful insects, ladybugs are important helpers for plants, farmers, and gardeners. These tiny insects are truly amazing!

References:

Learn About Nature. (n.d). *Ladybug anatomy*. Learn About Nature. Retrieved February 12, 2025, from <https://www.learnaboutnature.com/insects/ladybug/ladybug-anatomy/>

Encyclopædia Britannica. (n.d). *Ladybug*. Encyclopædia Britannica. Retrieved February 12, 2025, from <https://www.britannica.com/animal/ladybug>

Colorado State University Extension. (n.d). *Lady beetles - 5.594*. Colorado State University. Retrieved February 12, 2025, from <https://extension.colostate.edu/topic-areas/insects/lady-beetles-5-594/>

Case Studies Examples

Understanding 6LS1.1: The components and characteristics of an ecosystem affect the diversity of the organisms that live in it.

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Manitou Lake, Saskatchewan



Lake Louise, Alberta



Pigeon Lake, Alberta

Case Studies Examples

Understanding 6M1.2: Matter can change state if heated or cooled.

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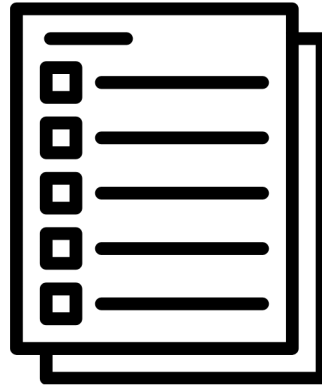


[Grade 3 Matter_ The Playground Fort.pdf](#)



Assessments

Multiple Choice



multiple choice by Ayu Lestari from Noun Project (CC BY 3.0)

Create four multiple choice questions at a grade 6 level. Make one question for each depth of knowledge questions. Use this understanding as the content for your question: The components and characteristics of an ecosystem affect the diversity of the organisms that live in it.

Assessments

DOK Level 1 – Recall

Question:

Which of the following is a component of an ecosystem?

- a) rainfall
- b) migration
- c) extinction
- d) recycling

Answer: a) rainfall

DOK Level 2 – Skill/Concept

Question:

A coral reef has warm water, shallow depth, and lots of sunlight. These conditions support many species of fish and coral. If the water temperature dropped suddenly, what is the most likely result?

- a) fish diversity will increase
- b) new coral species will grow
- c) fewer species will be able to survive
- d) the reef will grow faster

Answer: c) fewer species will be able to survive

DOK Level 3 – Strategic Thinking

Question:

Compare a desert ecosystem and a rainforest ecosystem. Which statement best explains why the rainforest has greater biodiversity?

- a) Rainforests have more predators.
- b) Deserts have better water conservation.
- c) Rainforests have more sunlight and soil nutrients.
- d) Rainforests have more resources that support many kinds of organisms.

Answer: d) Rainforests have more resources that support many kinds of organisms.

DOK Level 4 – Extended Thinking

Question:

Imagine a wetland is being drained and turned into farmland. Describe what steps a scientist might take to determine how this change will affect the diversity of local organisms.

- a) Measure crop growth over time
- b) Count how many birds live in a nearby city
- c) Observe and compare organisms before and after the change
- d) Ask people how they feel about the farmland

Answer: c) Observe and compare organisms before and after the change

How AI Can Assist You: Creating Assessments



Creating a Matching Definition Test to
Differentiate For a Specific Learner

How AI Can Assist You: In A Multi Grade Classroom

Grade $\frac{5}{6}$ PBL Matter Idea

Grade $\frac{1}{2}$ PBL Matter Idea

Grade $\frac{4}{5}$ PBL Matter Idea

How AI Can Assist You: Modified Reading

Simplify and Summarize a Website

Modify Reading for Different Abilities



How AI Can Assist You: Age Appropriately Defining the Curriculum

Definitions for Grade 3 Earth Systems



- Presentation
- Spoons Game



How AI Can Assist You: Image Generation

Squirrel Giraffe?

Grade 5 Space PBL Idea and an Image to Match!

Custom Coloring Sheets

Hard to find royalty/cost free image.

Link to Example

How AI Can Assist You: Creating Review Games



Review Game For Grade 5 Matter

How AI Can Assist You: With Project Based Learning

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Mystery Matter Mission PBL Idea



How AI Can Assist You: With Concept Attainment

Grade 4 Living Systems Learning Outcome: Students analyze organisms and relate external structures to **functions**.

Function is a key concept in the understandings and learning outcome i Grade 4 living systems.

Definition: A function is the job or purpose of something—what it is meant to do.

How AI Can Assist You: With Concept Attainment

AI Generated Examples and Non-Examples of Function

1. **The roots of a plant absorb water and nutrients from the soil.**
→ *(Function: absorbing water and nutrients)*
2. **The handle of a mug allows you to hold it without burning your hand.**
→ *(Function: protecting your hand and enabling holding)*
The wings of a bird help it fly through the air.
→ *(Function: flying)*
3. **The brakes on a bicycle slow it down or stop it.**
→ *(Function: stopping the bicycle)*
4. **A raincoat keeps your body dry during wet weather.**
→ *(Function: keeping dry)*

Examples

1. **The plant has long roots.**
→ (No function stated—just a description)
2. **The mug is made of ceramic.**
→ (Describes material, not its purpose)
3. **Birds fly across the sky.**
→ (Action is described, but not the purpose of wings)
4. **A bicycle has two wheels.**
→ (Fact, but no explanation of function)
5. **The coat is yellow and has buttons.**
→ (Describes appearance, not the function)

Non-Examples

How AI Can Assist You: Think-Pair-Share



Photo by [Redd Francisco](#) on [Unsplash](#)

Example

Other Ideas on how to use Chat GPT

Rubric Creation

Professional Email

Report Card Comments

Hands On Lab Activities

ISP Goals



The Consortium

Alberta Professional Learning Consortium

APLC Post Session Survey

Thank you for attending this session. To help us enhance the delivery of future sessions, we ask that you complete this short survey. **Your feedback is important and appreciated!**

Note: Your survey will be submitted anonymously.

Survey: <https://aplc.ca/survey/?id=15077>



Let's Try It Out!



Thank you

Please visit our website for more information

ted.zarowny@aplcc.ca

aplcc.ca

jess.oracheski@aplcc.ca

