What is Generative AI?

Grade 2-7 Activity Write Up

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DAY OF AI

What is Generative AI?

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About Actua

Actua is creating a Canada where every child has the skills and confidence they need to achieve their full potential. As a leading science, technology, engineering and mathematics (STEM) outreach organization, Actua includes over 40 universities and colleges, engaging 500,000 youth in 600 communities each year. For 25 years, Actua has focused on identifying and removing the barriers for entry into STEM and now have national programs dedicated to engaging Indigenous youth, girls and young women, Black youth, those facing economic barriers and youth in Northern and remote communities. For more information, please visit us online at www.actua.ca and on social media: Instagram, LinkedIn, Facebook and YouTube! For more information, please visit us online at www.actua.ca and on social media: Instagram, Facebook, LinkedIn, TikTok and YouTube!

What is Generative AI?

Activity Summary

In this activity, participants will explore how Generative AI uses prompts and datasets to create new content. They will begin by following simple drawing instructions to simulate following a prompt, then learn how Generative AI creates content and learns from datasets. They will then test their knowledge in a “Real or AI” game. Finally, participants will be placed in the role of a Generative AI, using a physical “dataset” of image cutouts to construct a unique collage based on a prompt.

Developed by Actua, 2025.

Delivery Environment	Activity Duration	Intended Audience	Tech
In-Person	65 Minutes	Grades 2-7 (*Ages 6-12*)	**Facilitators should have access to a laptop, projector, speakers, and a screen or blank wall to project onto.** • Projector • Speaker • Screen/Blank Wall • Laptops/Tablets

Achievement Goals

Learning Goals

Following this activity, participants will:

- **Discover** how to look for AI generated images.
- **Recognize** the role of human input in guiding Generative AI.
- **Identify** how AI uses datasets to learn and respond to prompts.

Success Criteria

Following this activity, participants can express:

- **I can follow** a set of instructions to create a drawing.
- **I can explain** the difference between image-based and text-based generators.
- **I can explain** why AI needs a dataset.

Logistics (Timing, Group Sizing, Materials)

Section Title	Time	Group Size	Materials
Opening Hook	5 minutes	*Whole Group*	**Facilitators** • What is Generative AI 2-7 - Activity Slide Deck *(Appendix C)*
Section 1: Generative AI	20 minutes	*Whole Group*	**Facilitators** • What is Generative AI 2-7 - Activity Slide Deck *(Appendix C)* **Participants** • Writing Utensil • Paper

Section Title	Time	Group Size	Materials
Section 2: Collage Crafts	30 minutes	*Whole Group*	**Facilitators** • What is Generative AI 2-7 - Activity Slide Deck *(Appendix C)* **Participants** • AI Collage Graphics *(Appendix C)* • Scissors • Gluestick
Reflection & Debrief	10 minutes	*Whole Group*	**Facilitators** • What is Generative AI 2-7 - Activity Slide Deck *(Appendix C)*

Safety Considerations

Safety considerations have been provided below to support safety during this activity, however they are not necessarily comprehensive. It is important that you review the activity and your delivery environment to determine any additional safety considerations that you should be implementing for the delivery of these activities.

Emotional Safety

- Facilitators should understand that participants have different lived experiences and prior knowledge about AI safety, AI, and digital citizenship. This activity may involve or lead to discussions of sensitive topics, such as ethical implications of AI. Facilitators should encourage open, respectful discussions and acknowledge all perspectives. Facilitators should always keep the participants' emotional safety in mind in these discussions, and defer to training from their institution and training received.

Curriculum Links

This activity aligns with these components found in the UNESCO AI Competency Framework for Students:

Human-Centered Mindset: Human Agency

- Learners are expected to be able to recognize that AI is human-led and that the decisions of the AI creators influence how AI systems impact human rights, human-AI interaction, and their own lives and societies (p. 29-30).

Human-Centered Mindset: AI Society Citizenship

- Learners are expected to be able to build critical views on the impact of AI on human societies and expand their human-centred values to promoting the design and use of AI for inclusive and sustainable development (p. 45-47).

Ethics of AI: Embodied Ethics

- Learners are expected to be able to develop a basic understanding of the ethical issues around AI, and the potential impact of AI on human rights, social justice, inclusion, equity and climate change within their local context and with regard to their personal lives. They will understand, and internalize the following key ethical principles, and will translate these in their reflective practices and uses of AI tools in their lives and learning: Do no harm, Proportionality, Nondiscrimination, Sustainability, Human determination, and Transparency (p. 31-32).

Ethics of AI: Safe and Responsible Use

- Learners are expected to be able to carry out responsible AI practices in compliance with ethical principles and locally applicable regulations. They are expected to be conscious of the risks of disclosing data privacy and take measures to ensure that their data are collected, used, shared, archived and deleted only with their deliberate and informed consent. They are also expected to be conscious of typical AI incidents and the specific risks of certain

AI systems, and be able to protect their own safety and that of their peers when using AI (p. 39-41).

AI Techniques and Applications: AI Foundations

- Learners are expected to develop basic knowledge, understanding and skills on AI, particularly with respect to data and algorithms, and understand the importance of the interdisciplinary foundational knowledge required for gradually deepening understanding of data and algorithms. They should also be able to connect conceptual knowledge on AI with their activities in society and daily life, concretizing a human-centred mindset and ethical principles through an understanding of how AI works and how AI interacts with humans (p. 32-34).

AI Systems Design: Iteration and Feedback

- Learners are expected to enhance and apply their interdisciplinary knowledge and practical methods to evaluate the humanistic appropriateness and methodological robustness of an AI model and its impact on individual users, societies and the environment. They are also expected to cultivate their identities as co-creators in the larger AI community (p. 50-52).

This activity can be connected to the following subject areas:

Science

- Understanding the role of science and technology in society and daily life.
- Investigating systems with specific inputs, processes, and outputs.

Language Arts

- Demonstrate an understanding of how media messages are created and how they affect the audience.

Mathematics

- Collecting, organizing, and interpreting qualitative and quantitative data.

Visual Arts

- Use the creative process and a variety of materials and techniques to express ideas, feelings, and/or experiences.

Community Connections

Community connections are suggestions from Actua, grounded in our approach, on how facilitators can adapt the activity to reflect the strengths, interests, and priorities of the community where or with whom it is delivered. Consider the following guiding questions to adapt the activity in meaningful ways:

- **Consult with community:** Are there local organizations, Knowledge Keepers, or community members who could contribute insight or context to this topic?
- **Draw on youth experience:** How can you give participants opportunities to share, reflect on, and apply how this learning is relevant to them or their community? Invite participants to identify what knowledge, who, and where they already learn from.
- **Integrate local examples:** How can you tailor this activity to local or regional interests, industries, or community priorities (e.g. land and environment, health, technologies)?

Activity Procedure

To Do in Advance

SECTION	PREPARATION

General	• **Think ahead and be ready to adapt:**
	  ◦ Determine your **delivery method** and leverage ideas from the delivery recommendations and adaptations sections.
	  ◦ While **estimated times** are provided, it will be helpful to think about how much time you would like to spend on different activities and discussions.

SECTION	PREPARATION
	◦ While **group sizes** (individual, pairs, groups) are suggested, many activities are flexible for whatever will work in your classroom. • **Prepare for the content:** ◦ Have **answers in mind** to share with participants for the various reflection questions asked. ◦ Examine the provided materials to determine if they are **suitable** for your participants. • **Equipment:** ◦ Ensure device, screen and projector are set up. ◦ Prepare participant devices.
Section 2: Collage Crafts	• Prepare printed copies of the AI Collage Graphics (*Appendix C*).

Opening Hook

1. Distribute a piece of paper and writing utensil to participants.
2. Explain that you are going to give them some instructions to draw some things.
3. Present the following instructions on slides 2-4 of the What is Generative AI 2-7 - Activity Slide Deck (*Appendix C*).
    a. Draw a square.
    b. Draw a triangle on the square.
    c. Draw a small rectangle inside of the square.
4. Have participants hold up their drawings. Point out similarities and differences between their drawings.
5. Show the simple house (slide 5), and ask if anyone drew something similar.
    a. If their drawing was completely different, that's okay! The instructions weren't very specific on purpose.

6. Explain to participants that when they followed these instructions, they acted similarly to a machine following an algorithm. An **algorithm** is like a set of instructions.
7. There is a specific kind of technology that makes things when given instructions - it's called **Generative AI**!

Section 1: Generative AI

1. Ask participants: "Are you familiar with Artificial Intelligence (or AI)? How about Generative AI?"
    a. **Artificial Intelligence (or AI)** when people create algorithms that help machines act smart, they can learn, solve problems, and make decisions. These algorithms teach computers to use the data they have, like pictures, sounds, or repeated experiences, to recognize patterns, make predictions, and improve over time.
2. Some AI is designed for tasks in specific fields, like medicine or engineering, while others are designed as a more general, multi-purpose tool. A common example of general-purpose AI is Generative AI, which can generate or create content such as text, images, and videos.
    a. **Generative AI** (Gen AI) is a specific kind of AI that is designed to create (generate) things based on prompts from a user. A **prompt** is a line written by the user that acts as a request for the AI to generate something. It then considers the information it has access to and creates a response!
3. Ask participants: "What kinds of things can Gen AI make?"
    a. Text.
    b. Images/Videos.
4. Ask participants: "How does Gen AI "create" images?"
    a. Gen AI generates images by mixing together parts of images they have seen before. They get these images from datasets, which function kind of like their memories!
    b. Once a user types out a prompt, the AI takes that and generates its interpretation of that prompt. Gen AI doesn't have an imagination like

we do - it needs to use complex math and pattern recognition to try and guess what we want it to make!

5. Explain to participants that you can compare Gen AI and datasets to cooking:
    a. **Datasets** are like ingredients in the kitchen. The more ingredients (data) you have, the more potential recipes are available to you!
    b. When Gen AI begins to study, organize, and learn from these datasets, it's like when a cook learns how to use ingredients in a kitchen. This process helps inform the AI **when** and **where** the data can be used!
    c. Finally, when the AI receives a request (prompt), it can then take the required ingredients (data) and combine it to cook (generate) what is requested!
6. Ask participants: "Where do you think these datasets come from?"
    a. Datasets can come from almost anywhere - the internet, books, museums, etc. This introduces an important question - who decides what data is used, and how?
    b. Larger Gen AI companies are not always clear about where they source their datasets from, leading many people to feel as though they are "stealing" content (like original images and writings posted to the internet).
7. Ask participants: "Can anyone share why it might be important to know where an AI is getting its information from?"
    a. There is the concern that the AI may be learning from biased information. For example, if an AI is trained on information only written by someone who dislikes apples, the AI may be biased against anything to do with the fruit, without any warning or disclaimer to the user! This is because its dataset has taught it a biased and incomplete version of reality.
8. Gen AI is getting better and better at creating content that looks very real, and there isn't always a warning telling us whether or not it is AI! So how can we spot AI generated content?
    a. Look for a credit/source! If it is written, is there a clearly labelled author? If it is an image, is it credited to a photographer or a reputable website?

    b. If it is an image or video, look at the details. Are they clear and make sense, or are they mushy and/or blurry?
    c. Consider the entire image/video/text - does it make sense? Does it seem realistic, or fantastical?
9. Play the "Real or AI" game in the What is Generative AI 2-7 - Activity Slide Deck (*Appendix C*). Explain to participants that they are going to be shown some real pictures and AI generated images, and they have to guess which one is which!

Section 2: Collage Crafts

1. Explain to participants that they will be taking on the role of a Generative AI and creating custom images from a prompt.
2. Participants will choose from four pre-made prompts and then use a "dataset" (assortment of images) to cut out and glue together their interpretation of the prompt.
    a. **Prompt 1:** Create a Robot
    b. **Prompt 2:** Create a Planet
    c. **Prompt 3:** Create a New Animal
    d. **Prompt 4:** Create a Helpful Machine
3. Distribute AI Collage Graphics - Activity Page (*Appendix C*), scissors, and glue sticks to participants.
4. Give participants time to create their collage. Once they have completed their first design, explain that sometimes users need to send a follow-up prompt that clarifies a detail that they want the Gen AI to change or add to the image.
5. Inform participants that they will now be receiving a follow-up prompt for their designs:
    a. **Follow-up 1:** Make it able to transform into something else.
    b. **Follow-up 2:** Add a moon or asteroid field around the planet.
    c. **Follow-up 3:** Make your animal be able to fly or swim.
    d. **Follow-up 4:** Design a power source for your machine.

    e. ***Note***: Some participants may have already implemented these follow-ups into their first design. If this is the case, create your own follow-up prompt according to their design.
6. Allow participants more time to iterate upon their design, using the follow-up prompt as inspiration.

Reflection & Debrief

1. Encourage participants to share their designs.
    a. Emphasize that participants with the same prompt ended up with different looking designs - this is similar to how Gen AI can interpret the same prompt differently!
2. Remind participants that they all started with the same base images. That was their "dataset". Despite all having the same starting images, they have unique designs and thought of different ways to use those parts!
    a. Gen AI can't think or be creative the way we can. It needs us to tell it (prompt) what to do, and then it uses the data and information it has to create something.
3. Using the What is Generative AI 2-7 - Activity Slide Deck (*Appendix C*), share with participants what a Gen AI tool (i.e. ChatGPT) created when prompted to make one of the example collages "realistic"!
4. Discuss the different careers listed in *Appendix A: Career & Mentor Connections*.

Delivery Adaptations

How might you adapt the time, space, materials, group sizes, or instructions to make this activity more approachable or more challenging? **Modifications** are ways to make the activity more accessible, **extensions** are ways to make the activity last longer or more challenging.

Modifications

SECTION 2: COLLAGE CRAFTS

- Have all participants follow the same prompt.
- Have participants come up with their own prompts for themselves or for each other.
- Participants may draw items for their collage, but they should be encouraged to draw things based on real items that they know about!

Extensions

SECTION 2: COLLAGE CRAFTS

- You can create additional follow-up prompts for participants, or have them follow a new prompt to create another image.

References & Gratitude

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Appendices

Appendix A: Career & Mentor Connections

ARTIST

- Artists work in a variety of mediums to create original, creative work. An artist can be created for museums, advertising, businesses or a variety of other purposes, such as personal expression.

COMPUTER PROGRAMMER

- A computer programmer is a person who creates computer software. They write code to build websites, computer games, financial analysis and many more.

MACHINE LEARNING RESEARCHER / DATA SCIENTIST

- Machine learning researchers or data scientists clean and interpret data while building models using a combination of that data and machine learning algorithms

STORYTELLER

- Storytellers are experts at telling stories using a variety of mediums which can include performing, writing, consulting, and podcasting.

Appendix B: Background Information

ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) is a branch of Computer Science that deals with a machine's ability to simulate intelligent behaviour. This includes cognitive functions we associate with human minds, such as perceiving, reasoning, learning, and adapting.

AI is becoming increasingly vital in our lives. From digital assistants, GPS navigation, and autonomous vehicles to tools like Siri/Google Home and generative AI tools (e.g., OpenAI's Chat GPT), its impact on our daily lives is growing. AI plays a crucial role in various aspects of work, enhancing efficiency, and taking on hazardous or monotonous tasks. As AI applications grow, discussions on AI ethics and responsible practices are increasingly important.

GENERATIVE AI

Generative AI is a type of artificial intelligence (AI) designed to create new content, such as text, images, music, or code, by learning patterns from existing data. As a subset of AI, which broadly refers to machines performing tasks that normally require human intelligence, generative AI specifically focuses on producing original outputs rather than just analyzing or recognizing information.

Generative AI models generate new data that resembles the examples they were trained on by understanding underlying patterns and structures. Instead of simply responding to inputs with predefined answers, generative AI can create novel and creative content.

What can generative AI create?

- **Text:** Stories, poems, essays, summaries, chat responses, reports, and even programming code.
- **Images:** Drawings, paintings, photorealistic pictures, designs, and digital art from descriptions or sketches.

- **Audio:** Music compositions, sound effects, voice synthesis, and speech generation.
- **Video:** Short animations, deepfake videos, or video sequences from textual prompts (in emerging applications).
- **3D Models:** Shapes and objects for games, simulations, or design prototypes.

Examples of Generative AI:

- **ChatGPT and other large language models:** Generate human-like text based on prompts.
- **DALL·E and Midjourney:** Create images from textual descriptions.
- **Music generation models:** Compose new songs or melodies.
- **Code generation tools:** Produce programming code based on natural language instructions.

ETHICS AND AI

Artificial intelligence offers powerful tools and new possibilities. As these systems learn from data, make decisions, and shape our world, it is important to consider their ethical impacts.

Actua has developed a resource (*Appendix C*) to support facilitators in leading discussions with youth about ethics and responsible AI use. Facilitators are encouraged to engage youth in meaningful conversations that empower them to think critically about how AI is designed, used, and experienced in the world around them. This resource emphasizes human agency and responsibility, supports values-based reflection, and creates space for curiosity, dialogue, and informed decision-making as digital citizens.

Appendix C: Additional Resources

GENERAL

Activity Slide Deck

- What is Generative AI 2-7 - Activity Slide Deck
    - ***Note:*** This link will automatically download to your device.

Supporting Resource

- AI in Context: Responsibility and Ethics in Artificial Intelligence

SECTION 2: COLLAGE CRAFTS

Activity Page(s)

- AI Collage Graphics (refer below)

What is Generative AI?

AI Collage Graphics

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