Input vs. Output

Visual Arts | Years 5-6

STEM Links: Science, Digital Technologies

Cover: **Blast Theory,** *Cat Royale*. 2023. [artist impression]. Live cat.

Contents

CURIOCITY BRISBANE

Did you notice the spelling mistake? *Curiocity* is actually a *portmanteau*, or a blended word made of two or more other words. Portmanteaus take on the meaning of the words they are made from, and the English language is full of them. Portmanteaus you might use include, *fortnight* (fourteen and night), *smog* (smoke and fog), *twerk* (twist and jerk), or *Pokémon* (pocket and monster).

What two words have been blended to make Curiocity, and why do you think World Science Festival Brisbane has used this portmanteau to name their public art program?

Putting things together to make something new is the definition of creativity. *Curiocity Brisbane* 2023 is jam-packed with multi-disciplinary artworks that blend science, technologies and art in creative and curious ways.

As you engage with these public artworks, what new things will you discover, and how will you respond in your own creative ways?

Input vs. Output

What do you think about artists using artificial intelligence (AI) to make, or contribute to making, their artworks? Do you think it is clever to make interactive art that learns from an audience to improve engagement? Or is it cheating, like using AI chatbots to write assignments for you?

Every corner of the world is buzzing with questions about ethical use of AI, with proponents of the technology claiming it will improve wellbeing and happiness. Other people are concerned that AI will replace human jobs, or even grow *too* intelligent and turn against us.

Artists have joined the conversation, breaking traditional art-making conventions and forcing us to redefine what an artwork is. Is this the kind of art you imagine when you think about the future?

Do you think AI can be used to stimulate curiosity and improve humanity? Do you agree with what Albert Einstein says in a letter to inventor, Rudolf Goldschmidt:

> *A little technology here and there can interest thinkers everywhere. And so I boldly think ahead: The two of us will lay an egg.*[i]

Or do you share similar fears to Einstein when (almost 20-years later), he writes this in a letter to his friend, psychiatrist, Otto Juliusburger:

> *I believe that the abominable deterioration of ethical standards stems primarily from the mechanisation and depersonalisation of our lives, a disastrous by-product of science and technology. Nostra culpa!*[ii] *(Nostra culpa* roughly translates to *our fault)*

Featured artworks

Blast Theory (UK). *Cat Royale*

Hochschuh & Donovan (Germany). *Cybernetic Intimacy*

Madeleine Flynn and Tim Humphrey. *Pivot*

Curriculum links

This resource is aligned with Australian Curriculum[iii], Visual Arts, Years 5-6 and includes reference to Australian Curriculum[iv], Science, Years 5-6 and Australian Curriculum[v], Digital Technologies, Years 5-6.

Content descriptions

Visual Arts, Years 5 and 6	
ACAVAM114	Explore ideas and practices used by artists, including practices of Aboriginal and Torres Strait Islander artists, to represent different views, beliefs and opinions
ACAVAM115	Develop and apply techniques and processes when making their artworks
ACAVAM116	Plan the display of artworks to enhance their meaning for an audience
AVAVAR117	Explain how visual arts conventions communicate meaning by comparing artworks from different social, cultural and historical contexts, including Aboriginal and Torres Strait Islander artworks

STEM links

Science, Years 5 and 6	
ACSHE081 ACSHE098	Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions
ACSHE083 ACSHE100	Scientific knowledge is used to solve problems and inform personal and community decisions
ACSUS231 ACSIS232	With guidance, pose clarifying questions and make predictions about scientific investigations
ACSIS090 ACSIS107	Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate

Digital Technologies, Years 5 and 6	
ACTDIP016	Acquire, store and validate different types of data, and use a range of software to interpret and visualise data to create information
ACTDIP018	Design a user interface for a digital system
ACTDIP021	Explain how student solutions and existing information systems are sustainable and meet current and future local community needs
ACTDIP022	Plan, create and communicate ideas and information, including collaboratively online, applying agreed ethical, social and technical protocols

General capabilities

Knowledge, skills, behaviours and dispositions:

- intercultural understanding
- critical and creative thinking
- personal and social capability
- information and communication technology (ICT) capability

Learning objectives

Students are learning:

- to explore and experiment with various media, using the elements and principles of art
- how artists use AI to create artworks
- how artists use interactive artwork features to engage an audience
- how own and others' viewpoints are represented within artworks

Success criteria

Students will be successful when they can:

- interpret and use shape, colour, composition and movement to express feelings, places and things
- demonstrate purposeful ideation with AI technologies
- discuss the purpose of the artwork and the use of AI technologies, using vocabulary to label, categorise, describe and explain
- reflect on how the use of AI in artworks is affected by time, human and environmental factors

Teaching notes

Timing

4 x 1-hour sessions

Materials

- each student will need a HB pencil, eraser, coloured pencils and a sketchbook, visual diary or paper to work on
- internet connection and access to image sites and video player.

How to use

Students view featured artworks in situ, prior to completing these activities. Activities can be modified for remote learning.

To enrich this experience, Queensland Museum learning resources may be used concurrently in other learning areas. Creating a free account means you can save, sort, manage and share your favourite collection items (audio and video, objects, events, fact sheets, images, learning resources, loan kits, etc.).

Learning activities

Lesson 1: What is AI?

Inquiry question

- What is AI and should we be worried?

Preparation

- Students will engage with the video program, *Will Self-Taught, A.I. Powered Robots Be the End of Us?*[vi]. The entire program runs for 1:02:39, but you can use the timecodes to select topics. Suggested segments are:
    - Opening film on the history and future of artificial intelligence 00:00
    - How is AI changing the world of art and creativity? 16:01
    - Can computers be creative? 19:35

Learning activities

- View the video program and ask each student to take note of the way the participants (all scientists) talk about and define art and creativity.
- Have a class discussion and ask students to record any interesting ideas or information. Each student may either make a comment or ask a question about the video they have just watched, or AI in general. Some prompts to lead discussion include:
    - Would you describe the development of AI as a risk or opportunity? Why?
    - Are there places or industries where AI does *not* belong? Why?
    - What kinds of moral or ethical dilemmas could you imagine unfolding with the use of AI in the creative industries?
    - Do you think the AI created *real* art? If not, why not?
    - Is copying someone else's art demonstrating creativity? And as a follow on, do you know how AI learns a skill?
    - Do you think AI is going to help (or force) us to be more creative? Why, or why not?
    - Do you think something is fundamentally *missing* from AI created art?

Lesson 2 & 3: Artificial Intelligence Artworks (AIA)

Inquiry question

- How and why do artists create artworks using AI technology?

Preparation

- Project a still-image or moving footage of the three featured artworks in situ, so students can recollect their experience with the works as they enter the classroom.
- Print a class set (or provide digital copies), of the *AIA Analysis Worksheet* (Appendix A).

Introductory activity

> *In this world premiere of Cat Royale, three cats live in a visually stunning utopian environment, which will be streamed to Curiocity Brisbane from the UK. As the cats go about their day, eating, playing and exploring, a dedicated Artificial Intelligence system watches them, learns what they like best, and controls a robot arm that offers a massage, throws a ball or dangles a feather to increase the happiness of the cats.*
>
> *Blast Theory (Cat Royale)*

> *When entering their habitat and interacting with the Cybernetic Intimacy robots, the audience will be part of an experiment in interspecies communication.*
>
> *Reacting to proximity and different forms of expressions, the robots change their behaviours which creates an interaction in which both species (human and robot) investigate each other. Even simple movements towards or away from the human give space for the imagination about the robot's playfulness, sympathy or friendliness.*
>
> *Hochschuh & Donovan (Cybernetic Intimacy)*

> *Pivot is a field of semi-intelligent seesaws activated by audience riders. Each seesaw listens and responds to its rider through an internet connected speech recognition interface. Their voices are amplified, allowing audio conversations to be heard within 20 metres. The seesaws also speak 20 different languages and have many voices that carry across the field.*
>
> *Madeleine Flynn and Tim Humphrey (Pivot)*

Read the above statements out loud.

As a class, brainstorm a list of words that describe audience interaction with these three artworks and record answers on the whiteboard.

Learning activities

- As a class, complete the *AIA Analysis Worksheet* for one of the three featured artworks. Answer the following questions using information on the *Curiocity Brisbane* 2023 webpage, as well as the artists' webpages.

- *How have the artists collaborated with other professional communities to make this artwork?*
- *How does the AI learn from the audience, or require audience participation?*
- *Why has the artist decided to use AI in this artwork?*
- *Do you think the use of AI affects the way audiences respond to the work?*
- *Could the artwork exist without AI? Would it be better or worse?*

- Working in pairs, students complete the *AIA Analysis Worksheet* for the remaining two artworks.

Lesson 4: Designing an AIA

This is a design activity that could be expanded to include making and form an assessment task.

Inquiry question

- How do artists represent creative ideas using AI technologies?

Preparation

- Students will need to refer to their *AIA Analysis Worksheets* for this lesson.
- Each student will require a HB pencil, eraser, ruler and access to coloured pencils.

Learning activities

- Students will use research and reflections from the previous lessons to inform the design of their own AIA. They should try not to be stalled by elements or features of the work that are beyond their ability.
- This is an individual task. To design their artwork, students undertake the phases below, documenting their working.
- Feeling
    - What are my quick ideas?
    - What AI format or platform do I enjoy interacting with?
    - How do I want my artwork to behave, feel or look?
    - What information do I already have?
    - What information do I need?
- Researching
    - Which *Curiocity Brisbane* artworks use AI in a similar way to my design?
    - Complete the *AIA Analysis Worksheet* in response to my own design.
    - What factors would inhibit or stop me from making this artwork? Who would I need to collaborate with or get help from to make it?
- Developing
    - Ideate, by drawing multiple rough, thumbnail sketches, or by speaking or writing concepts.
    - Refine ideas by choosing a few concepts to further develop.
- Testing
    - Share two or three designs to share with an elbow partner and collect feedback.
    - Select a design to share with a small group. Practice giving and receiving feedback.

Note: Students could use the TAG method of feedback (Tell something you like, Ask a question, Give some positive suggestions for improvement).

Reflecting

- What are the strengths of my design?
- What are the weaknesses of my design?
- What problems need to be solved in order to create the artwork?
- What outstanding questions do I have?

Extension activities

- Students create a 3D maquette (prototype), detailed sketch, or digital rendering of their artwork in situ. They should annotate to indicate design features.

Appendices

Appendix A: AIA Analysis Worksheet

Artwork information: *Include title, artist, year made, dimensions, materials and location*	
How have the artists collaborated with other professional communities to make this artwork?	
How does the AI learn from the audience, or require audience participation?	
Why has the artist decided to use AI in this artwork?	
Do you think the use of AI affects the way audiences respond to the work?	
Could the artwork exist without AI? Would it be better or worse?	

Endnotes

[i] Einstein, A. (1928). *Letter to Rudolf Goldschmidt.*

[ii] Einstein, A. (1946). *Letter to Otto Juliusburger.*

[iii] Australian Curriculum, Assessment and Reporting Authority (ACARA) (2019). *Australian Curriculum, Visual Arts, 2019*. Available at: https://www.australiancurriculum.edu.au/f-10-curriculum/the-arts/visual-arts/

[iv] Australian Curriculum, Assessment and Reporting Authority (ACARA) (2019). *Australian Curriculum, Science (Version 8.4), 2019.* Available at: https://www.australiancurriculum.edu.au/f-10-curriculum/science/

[v] Australian Curriculum, Assessment and Reporting Authority (ACARA) (2019). *Australian Curriculum, Design Technologies (Version 8.4), 2019.* Available at: https://www.australiancurriculum.edu.au/f-10-curriculum/technologies/digital-technologies/

[vi] World Science Festival (2019). *Will self-taught, A.I. powered robots be the end of us?* [festival program]. Available at: https://www.youtube.com/watch?v=IHc5Zt7qT6o