MENTORS HANDBOOK 2022

NETWORKS

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INTRODUCTION

The Australian STEM Video Game Challenge is a national competition open to all Australian students in Years 5-12.

The competition is completely free to enter, and represents a great opportunity for upper primary and secondary students to engage in hands-on, inquiry-driven learning spanning the areas of science, technology, engineering and maths (STEM) in a fun, exciting and challenging way.

Able to work in teams of up to four (4) members, students are encouraged to work collaboratively to design and build a working and playable original video game based on STEM in response to a core theme. Teams can be comprised of students from different classes or schools, provided they are all supported by a single mentor.

Facilitated by the Australian Council for Educational Research (ACER) and supported by leading organisations at the cross-section of education, information technology, entrepreneurial innovation and entertainment, exists to help engage Australian students with STEM (science, technology, engineering and mathematics) disciplines in a new and exciting way, and to facilitate self-motivated and enjoyable learning that inspires and prepares the next generation of Australian students for the future.

Who can be a Mentor?

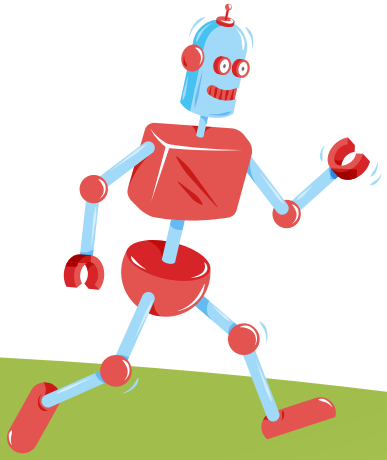
Anyone over the age of 18 with an up to date working with children check! Team Mentors do not need to be experienced game designers or professionals in the IT area. Feedback from mentors in the past tells us that the students are more than likely quite knowledgeable about their chosen game design platform, and they will problem solve what they need to. The mentoring for most students will be in supporting their creative process, helping them to scale a design back to something they can manage in their available time. Reminding them that simple ideas done well are generally the way to go.

Teachers and parents make ideal mentors and are well placed to facilitate the Australian STEM Video Game Challenge. A mentor can be shared by more than one team, meaning that a single teacher can exist as the mentor for multiple teams of students (i.e. a class).

The role of the Team Mentor is:

- To register their team(s) and the students within each team.
- To provide support and advice, encourage learning, and mediate any issues that might arise as their team(s) progress through the game design process.
- To take responsibility for submitting the finished game and completed Game Design Document (GDD)
- Provide a reliable point of contact for communications between the Australian STEM Video Game Challenge and the participating students.

A key part of the mentoring role is supporting the students in the project management of their game. It cannot be stressed enough that students should aim to finish with a good amount of time to test their game before submission, in order to have a game that plays for the judges. If we can't play it, we can't judge it and it will be knocked out in Phase I.



REGISTRATION

To register for the Australian STEM Video Game Challenge, each team of students needs to identify an adult to serve as their team mentor.

Team mentors register the team, and serve as the primary communication point between the Australian STEM Video Game Challenge organisers and the team members. Team mentors can register as many different teams as they like – in this way teachers and Code Club facilitators are able to act as mentor for all of the students in their class or club.

Visit **www.stemgames.org.au/registration** from 21 February - 22 July 2022 to register your team(s).

Game Categories

Students may enter in one of six (6) categories:

Year 5-8: Playable Game developed in Scratch

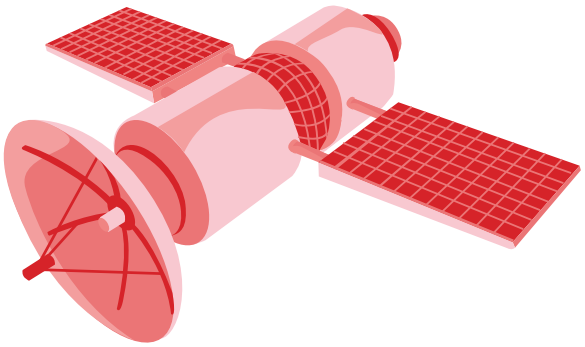
Year 5-8: Playable Game developed in GODOT

Year 5-8: Playable Game developed in any other free, or free for education, game development platform.

Year 9-12: Playable Game developed in GODOT

Year 9-12: Playable Game developed in Unity3D or Unreal Engine

Year 9-12: Playable Game developed in any other free, or free for education, game development platform.



Key Dates:

Team registration window	***21 February - 22 July 2022***
Game submission window	***25 July - 5 August 2022***
Judging	***8 August - 9 September***
Winners announced	***mid-September***
PAX	***TBC***

GAME DEVELOPMENT PLATFORMS

To create games, development teams utilise game development platforms (sometimes referred to as 'game engines').The Australian STEM Video Game Challenge allows students to use any game development platform, provided it is free or free-for-education.

Our entry categories reflect a collection of popular game development platforms that provide strong support for education through the availability of resources, tools and content to assist with teaching and learning.

Scratch

Scratch was developed by the Lifelong Kindergarten at the Massachusetts Institute of Technology (MIT). Designed for beginners, Scratch utilises a 'drag-and drop' environment, and a simplified programming language to enable younger students program and share interactive media such as stories, games, and animation.

https://scratch.mit.edu

Unity3D

An industry-level game development platform, Unity3D is a powerful creating tool with a wide user base. Combining a visual editor with coding and scripting languages such as C# and Javascript, Unity3D is a professional level tool capable of producing both 2D and 3D games, and offers a large knowledge base for educational purposes, including a dedicated educator toolkit.

https://store.unity.com

GODOT

GODOT is a 2D and 3D cross-platform compatible game engine released as open source software under a license from MIT. GODOT aims to offer a fully integrated game development environment. Allowing young developers to create a game, needing no other tools beyond those used for content creation (art assets, music etc.). The website has great supporting information and tutorials for those new to GODOT and game development.

https://godotengine.org/

Unreal Engine

Commonly used in professional game production, Unreal Engine uses the C++ language alongside a visual development environment. Designed primarily for the production of 3D games, Unreal Engine has a broad user base and offers a comprehensive suite of documentation, as well as a range of educational materials including complete projects, template games and tutorials.

https://www.unrealengine.com

Remember: Before choosing a game development platform, do some research! Consider what sort of game you plan to make, how it might function and the experience level of your team members – then find a game development platform that best suits your needs!

TEACHING RESOURCES

Are you unsure of where to start? Never fear, our Teacher Learning Pack is free from the Teaching Resources page on the STEM games website. It provides a foundational overview of game development, including a brief history of video games and gaming technology, positioning within key subject areas and suggestions for lessons to mirror the game development cycle.

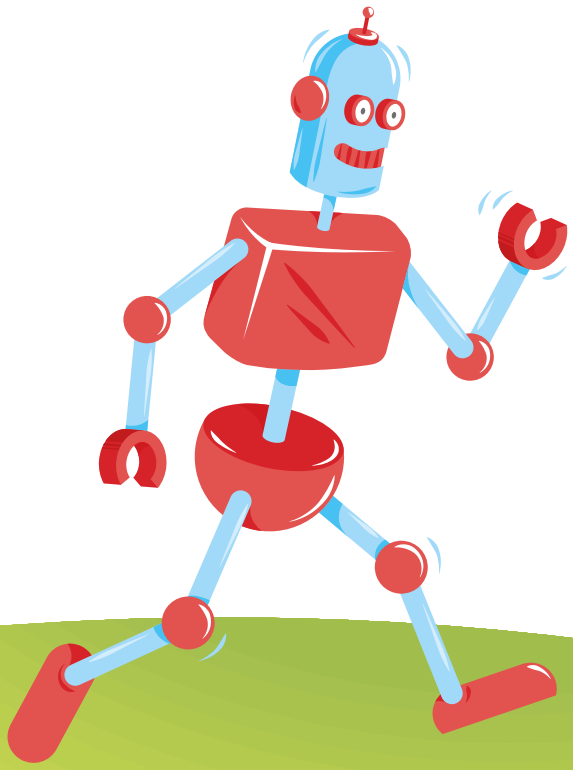
Positioning

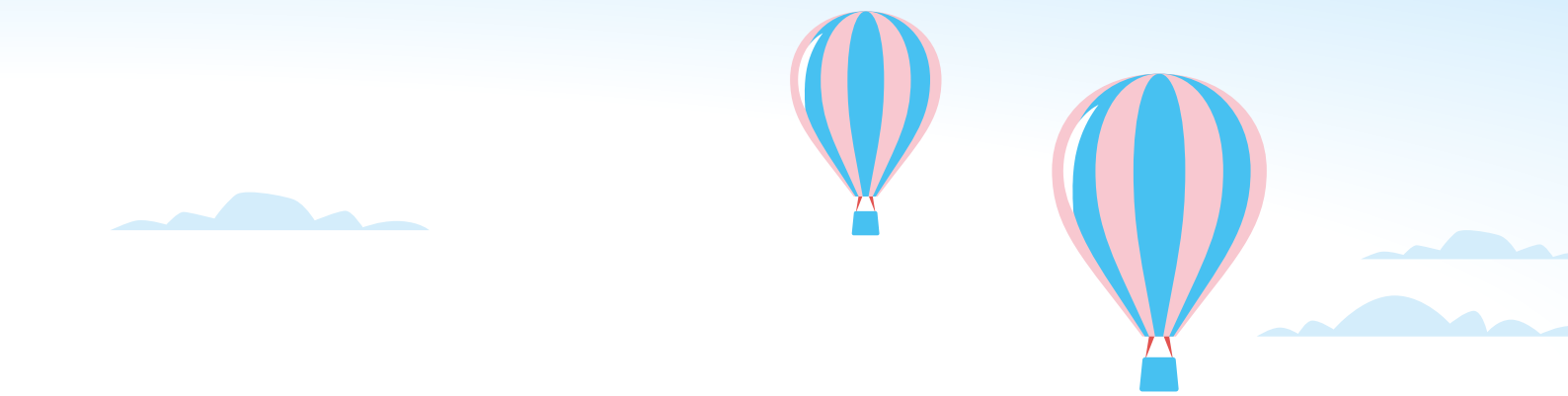
POSSIBLE APPROACHES TO INTEGRATING THE STEM VIDEO GAME CHALLENGE INTO A SCHOOL

There are a variety of opportunities for students and teachers to integrate the STEM Video Game challenge into their work and life at school. These ideas show some possibilities, but others – including innovative combinations of these – might also be considered:

1. With the support of a teacher (or teachers), student teams could incorporate the STEM Video Game challenge into a single subject as an assessment task or alternate task
2. Students could partner across several classes/subjects, using skills and knowledge developed to help support their STEM Video Game challenge entry
3. Students could partner out of classes in extra-curricular programs or on their own

No matter the approach that student teams take we encourage teachers to support students in attempting their game development projects. The experience of students and supervising teachers in previous years shows that involvement in the STEM Video Game challenge is an important and key moment in the school lives of students and teachers.





OVERVIEW OF SKILLS AND CONTENT AREAS

Language/Literacy

Games generally require a significant investment in printed text. Whether a first person shooter or a role playing game, participants will require text-based instructions and developers must write them.

The STEM Video Game challenge includes a requirement that all teams describe their game and the development process in a Game Design Document (GDD). The GDD is a great opportunity for students to write about the development process and to improve and enhance their language and literacy skills.

Mathematics

Coding a game heavily relies on arithmetic language. The core of game design is a core which revolves around numeracy – the language through which software, hardware, and the product which ultimately arrives onscreen is a mathematical one. Thus, game design is a powerful method of numeracy education.

Scientific literacy

Game design engages powerfully with scientific literacy education – from understanding the principles of physics and motion, the psychology of perception and interaction, and the principles underpinning the ways that humans hear, see, and experience the world. These are all elements which must be understood and manipulated in order to produce good, engaging game design.

The game development process involves students experimenting with their characters, narrative, game objects and backgrounds. Students need to develop the ability to predict and explain outcomes to other members of the game design team – communicating their work and progress – and incorporating the results into further game design. They need to be able to constructively critique the work of their partners and respond positively to criticism and suggestion.

I.T. literacy

The technologies involved in video game creation are disparate, complex, and often challenging for both neophyte and experienced development staff. Developers must often straddle multiple design roles, requiring the ongoing skill development of multiple I.T-based literacies and competencies in specific platforms. Graphic design suites, compilers, audio recording software, and animation packages may all need to be mastered during a role in a small design team, resulting in rich opportunities for I.T teaching and learning.

Coding is now recognised as an important skill for students of all ages and year levels to develop. The STEM Video Game challenge encourages students to develop their coding skills in the supportive environment of peer teams. The coding languages and platforms used by students for the challenge are available for students across a wide range of coding backgrounds – from absolute beginners to coding geniuses.

Multimedia design

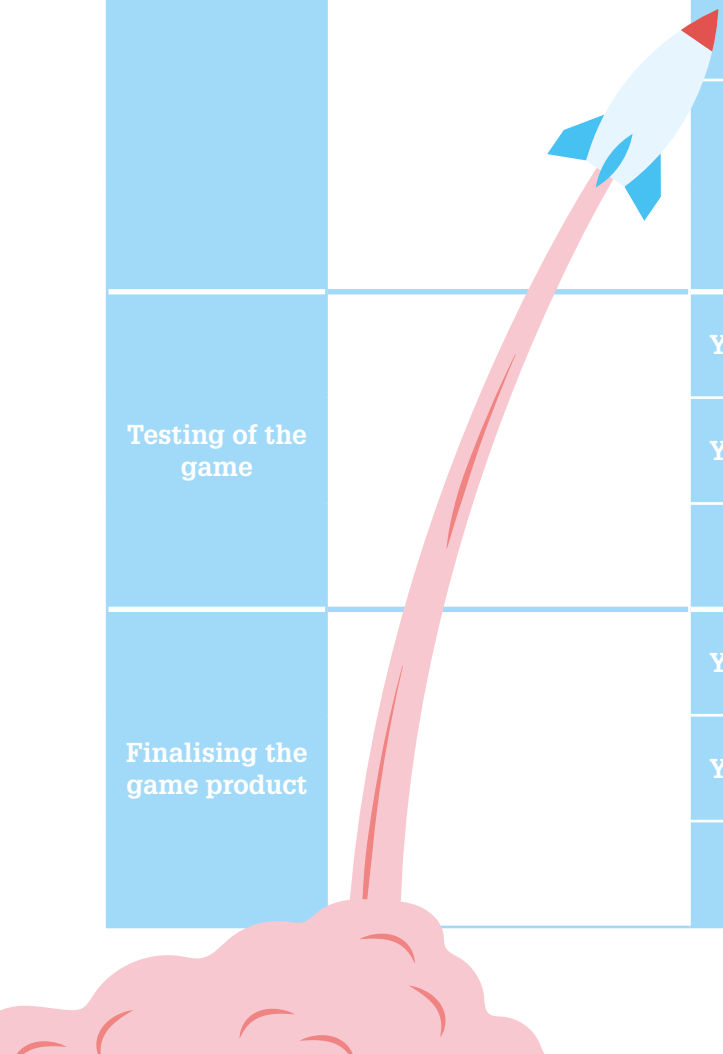
Sound design, video design, and the capturing and editing of content for integration into development builds of video games requires an extensive understanding of multimedia practices. From music to sound effects to video-based cutscenes, the multimedia aspect of video game design offers many different paths for skill development.

Curriculum links

Linking the STEM Video Game Challenge to the Australian Curriculum (Years 5 to 10)

Elements of Australian STEM Video Game Challenge		Australian Curriculum Content	
Collaborating as a team	Although the challenge can be completed by individual students, many students complete their project as a part of a team. Working collaboratively requires communication of ideas, consultation between group members, and the development of agreed protocols. Examples of these processes in action could include: • developing a set of 'rules' about appropriate conduct within a team and using these rules as a basis for resolving dilemmas • using a range of communication tools (including collaborative online environments) to share ideas and information • using cloud computing to store common files and establishing virtual meetings organising timelines, devising file naming conventions and planning backup measures • using software to record and monitor project tasks, responsibilities and timeframes and to organise continuous opportunities to review progress with collaborative partners and to conduct regular unit testing	Years 5/6	Plan, create and communicate ideas and information, including collaboratively online, applying agreed ethical, social and technical protocols (ACTDIP022)
		Years 7/8	Plan and manage projects that create and communicate ideas and information collaboratively online, taking safety and social contexts into account (ACTDIP032)
		Years 9/10	Plan and manage projects using an iterative and collaborative approach, identifying risks and considering safety and sustainability (ACTDIP044)
Planning the game project	The initial planning and development of ideas for the game, could include asking such questions as: • Who is the game for? • What aspect(s) of the theme might the game address? • What pre-existing games might the developed game be like? • How could interactivity be used in the game? • What might be the mechanics of the game play? • Will there be a story? Students might consider such things as: • explaining ways in which the visual, auditory and user controls and interface interact • consistent placement of symbols to help with performing actions that require speed • modelling the attributes of real-world objects for the game • identifying the elements of the game design such as characters, movements, collisions and scoring • explaining the role of interactivity systems, such as mouse, touch pad, screen, or accelerometer • investigating reliability, user-friendliness, portability and robustness	Years 5/6	Plan, create and communicate ideas and information, including collaboratively online, applying agreed ethical, social and technical protocols (ACTDIP022)
		Years 7/8	Plan and manage projects that create and communicate ideas and information collaboratively online, taking safety and social contexts into account (ACTDIP032)
		Years 9/10	Plan and manage projects using an iterative and collaborative approach, identifying risks and considering safety and sustainability (ACTDIP044)

Elements of Australian STEM Video Game Challenge		Australian Curriculum Content	
Designing for the game		Years 5/6	Design a user interface for a digital system (ACTDIP018)
		Years 7/8	Investigate how digital systems represent text, image and audio data in binary (ACTDIK024)
			Analyse and visualise data using a range of software to create information, and use structured data to model objects or events (ACTDIP026)
			Design the user experience of a digital system, generating, evaluating and communicating alternative designs (ACTDIP028)
		Years 9/10	Design the user experience of a digital system by evaluating alternative designs against criteria including functionality, accessibility, usability, and aesthetics (ACTDIP039)
Coding for the game		Years 5/6	Examine how whole numbers are used to represent all data in digital systems (ACTDIK015)
			Design, modify and follow simple algorithms involving sequences of steps, branching, and iteration (repetition) (ACTDIP019)
			Implement digital solutions as simple visual programs involving branching, iteration (repetition), and user input (ACTDIP020)
		Years 7/8	Design algorithms represented diagrammatically and in English, and trace algorithms to predict output for a given input and to identify errors (ACTDIP029)
			Implement and modify programs with user interfaces involving branching, iteration and functions in a general-purpose programming language (ACTDIP030)
		Years 9/10	Design algorithms represented diagrammatically and in structured English and validate algorithms and programs through tracing and test cases (ACTDIP040)
			Implement modular programs, applying selected algorithms and data structures including using an object-oriented programming language (ACTDIP041)
Testing of the game		Years 5/6	n/a
		Years 7/8	Evaluate how student solutions and existing information systems meet needs, are innovative, and take account of future risks and sustainability (ACTDIP031)
		Years 9/10	Plan and manage projects using an iterative and collaborative approach, identifying risks and considering safety and sustainability (ACTDIP044)
Finalising the game product		Years 5/6	Plan, create and communicate ideas and information, including collaboratively online, applying agreed ethical, social and technical protocols (ACTDIP022)
		Years 7/8	Plan and manage projects that create and communicate ideas and information collaboratively online, taking safety and social contexts into account (ACTDIP032)
		Years 9/10	Plan and manage projects using an iterative and collaborative approach, identifying risks and considering safety and sustainability (ACTDIP044)



Linking the STEM Video Game Challenge to the senior Australian curricula (Years 11 and 12)

A sampling of courses available in the senior secondary years (Year 11 and Year 12) throughout Australia is included below.

Some of these course make explicit reference to video games as a suitable form for study and development by students. Others include content and skills that are appropriate (and in some cases, necessary) for the development of video games. Across many of these courses it would be possible and appropriate for teachers to encourage students to use video games developed for the purposes of course work and assessment tasks also as entries to the STEM Video Game challenge.

These are not intended to be completely comprehensive. With the help and support of teachers, senior students studying courses in English, Science, Humanities, and many other areas could feasibly incorporate the development of a game into work requirements and assessment tasks.

ACT

Information Technology	Visual Arts
• Units include Computer Games Programming and Design, Computer Games Design	• Units include: Contemporary Game Design

NEW SOUTH WALES

HSC Visual Design	HSC Software Design Development
• This course includes an Interactive and Multimedia module that references video games as a possible context for study	• This course includes modules on introduction to software development, the software development cycle, and developing software solutions. These incorporate aspects that could be tailored to video games as a context or assessment approach: Defining and understanding the problem, Planning and designing software solutions, Implementing software solutions, Testing and evaluating software solutions, and Maintaining software solutions

QUEENSLAND

QCE Film, Television and New Media	QCE Information Technology Systems
• This course incorporates aspects of design that match the process in the STEM Video Game competition	• Contexts described in this course include Game Design
QCE Information and Communication Technology	**QCE Media Arts in Practice**
• This course includes electives, Animation, Application Development, Audio and Video Production, and Digital Imaging and Modelling	• This course includes the elective, Interactive Media
QCE Information Processing and Technology	**QCE Visual Arts in Practice**
• This course includes topics, Algorithms and Software Programming, both of which can be applied to the development of video games	• This course includes the elective, Digital and 4D

SOUTH AUSTRALIA

Digital Technologies (Stage 1)	Digital Technologies (Stage 1)
• Focus areas include: Programming, Advanced programming and Exploring innovations; • Assessment includes Project skills tasks, and development of Digital solutions	• Focus areas include: Computational thinking, Design and programming, and Iterative project development; • School assessment includes Project skills tasks, and a Collaborative project

TASMANIA

Computer Graphics and Design

- Unit 2 Design Studios includes as an elective module: Asset development, game design and production
- Unit 3 Extended Project

Computer Science

- Area 4 Computing Option includes Game development in a suitable environment as a suggested topic

VICTORIA

VCE Computing

- Unit 1, Area of study 1 – Data and graphic solutions
- Unit 2, Area of study 1 – Programming; Area of study 2 – Data analysis and visualisation

VCE Software Development

- Unit 3, Area of study 1 – Programming practice; Area of study 2 – Analysis and design
- Unit 4, Area of study 1 – Software solutions

VCE Visual Communication and Design

- Unit 1, Area of study 2 – Design elements and design principles
- Unit 2, Area of study 3 – Applying the design process

VCE Media

- In this course video games are explicitly identified as an appropriate media form for students to study.
- Unit 1, Area of study 2 – Media forms in production
- Unit 2, Area of study 2 – Narratives in production
- Unit 3, Area of study 2 – Media production development; Area of study 3 – Media production design
- Unit 4, Area of study 1 – Media production

VCE VET Information, Digital Media and Technology

- This course includes options for the completion of the Certificate III level. Option B is Games Creation Focus.

WESTERN AUSTRALIA

Applied Information Technology (ATAR)

- Unit 2 Design Studios includes as an elective module: Asset development, game design and production
- Unit 3 Extended Project

Applied Information Technology (General)

- Relevant content includes design concepts, application skills, and project management;
- 70% (at Year 11) and 60% (at Year 12) of the assessment for this subject is based on a project which involves students researching and creating digital solutions

Applied Information Technology (Foundation)

- Relevant content includes core modules – project management, and social collaboration – and elective modules – digital photography and graphics manipulation, sound editing, video editing, animation, and gaming;
- 70% (at Year 11) and 50% (at Year 12) of the assessment for this subject is based on a project which involves students researching and creating digital solutions

Computer Science (ATAR)

- Relevant content includes programming;
- 40% of the assessment for this subject is based on a project which involves students developing a software system

Computer Science (General)

- Relevant content includes programming;
- Suggested programming languages for the Computer Science General course include Scratch, Gamefroot, GameMaker, and Gamesalad;
- 60% (at Year 11) and 50% (at Year 12) of the assessment for this subject is based on a project which involves students developing a software system

Media Production and Analysis (ATAR)

- Unit 1 Popular Culture suggested contexts include computer games;
- Unit 3 Media Art suggested contexts include interactive entertainment;
- 50% of the assessment for this subject at both Year's 11 and 12 is based on extended production projects

Media Production and Analysis (General)

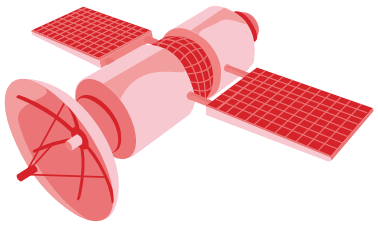
- Unit 1 Mass Media suggested contexts include video games;
- 70% of the assessment for this subject is based on an extended production project

THEME

NETWORKS

> “We are now all connected by the internet, like neurons in a giant brain.”
>
> **Stephen Hawking**

What is a network?



A network is a group of things connected in some way.

The connected things could be physical, like train stations or computers or neurons in a brain, or they might be ideas or feelings or other things that are not physical. The connections between these things that help to form the network could also be physical like pipes or roads or wires, or they too might be non-physical.

So we can organise networks into two main types: *physical and non-physical*.

Physical networks are the actual connections between real world objects:

- a tree contains a network of branches and roots
- an integrated circuit contains a network of connected semiconductors
- a town or city contains interconnected roads between particular destinations.

Non-physical networks are made of connections between ideas and other non-physical things.

Mathematical networks connect mathematical ideas – for example, the edges of a cube are connections between the corners of the cube. If the cube is real—like dice—the connections can be physical. But the dice you might have been imagining when you read the last sentence are not real and their edges are a non-physical network.

What type of network would a social network that connects people be? The people themselves are physical things, but what are the actual connections? What connects you to your friends and family? Is it physical?

The connections in networks can be laid out in different ways. We sometimes call the layout of a network its topology. There are a few different types of network topology:

- line
- bus
- mesh
- ring
- star
- tree

Figure 1 shows examples of a computer ring and a mesh topology. What are the differences between the ring and mesh topologies? Why do you think they were named?

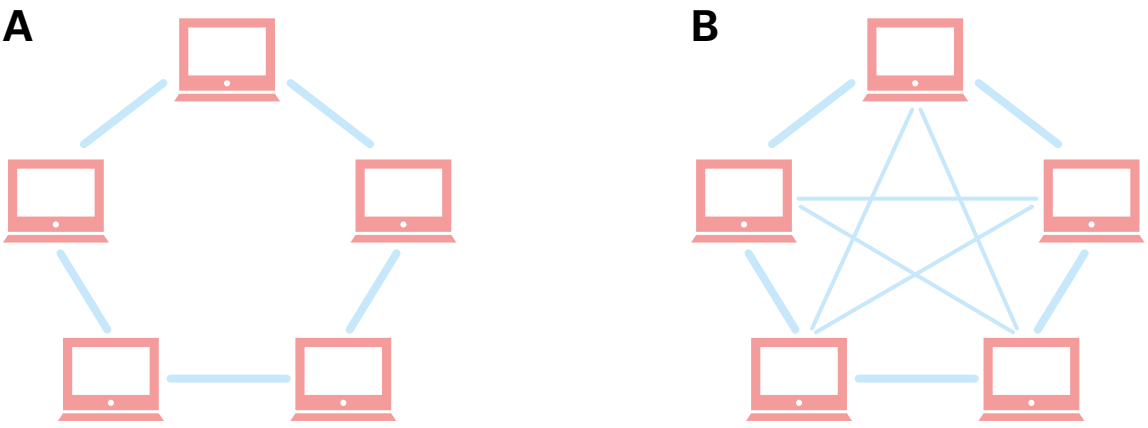


Figure 1: (A) a ring topology network and (B) a mesh topology network.

What do you think the other layouts might actually look like if they were drawn? Can you think of any other topologies?

Networks in games

So, with the STEM video game challenge in 2022, your challenge is to build a game that involves a network in some way.

There are different ways that networks could be incorporated into a game:

Network world

The network could form the 'world' of the game. Many games are based in a world of some kind: the background in which the world is set.

The game world could be detailed and complex, like *Fortnite* or *Breath of the Wild*. The world could be based on something in the real world, like *FIFA* or *NBA 2K*. Or the world could be something simple, like the 64 squares of a chess board.

In a *network world* game, the world is a network. Players might have to navigate around the network to complete the goal, or goals, of the game.

Network goal

Maybe the network is part of the world of the game, or not, but either way is the goal itself of the game. The game might involve building or extending or destroying a network in some way.

There are lots of games like this, including *Train Conductor World* and *Mini Metro*. What sort of network could you build in your game?

Connections in a network

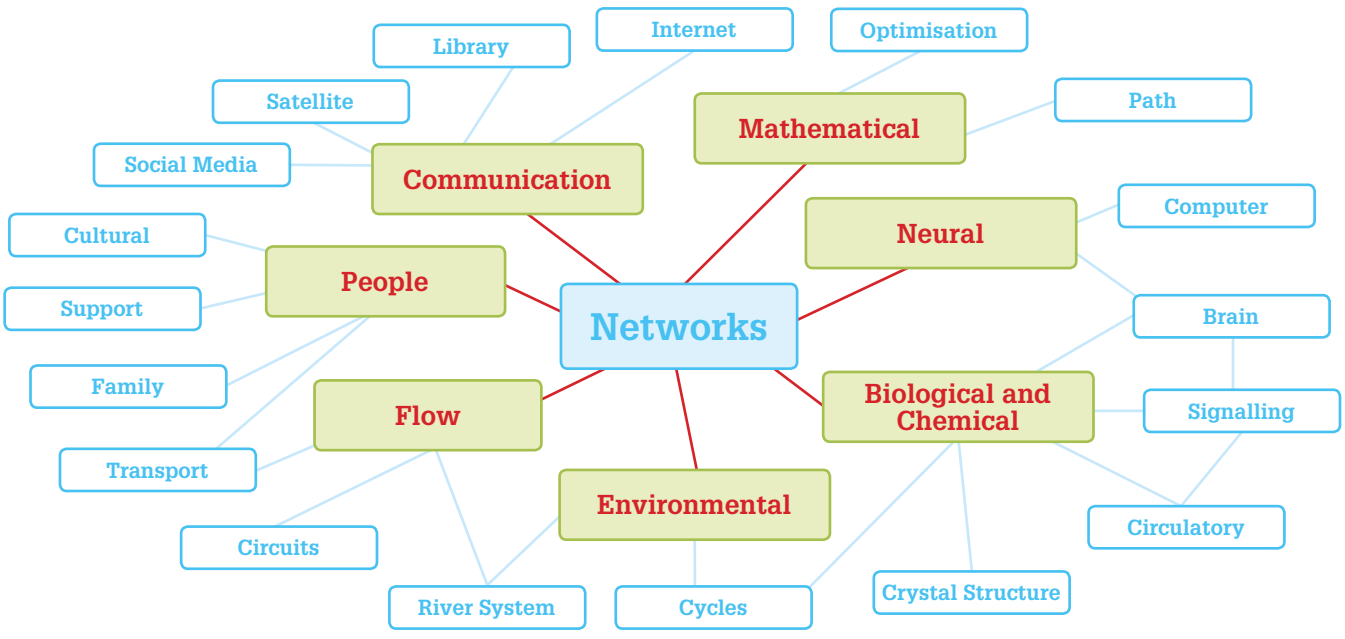
Maybe it's the actual connections within the network that are the key part of a game. The goal of the game is related to the connections that do or don't exist, or the connections that can be built between the things in the network. *Flow Free* is an example of a game that focuses on the connections.

Of course, these are only ideas to get you started. We would love you to be really creative and think beyond what is described here.

Some starting points to think about networks and your game

The network theme is only a starting point for your imagination to run wild.

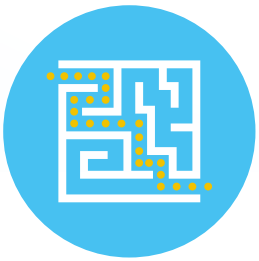
But if you are stuck, you might consider some of these different sorts of networks and the ways that they might be incorporated into a game.



PROJECT MANAGEMENT

How your students organise their team structure is entirely up to you and them. What works for one team may not suit another. However we recommend considering the assignment of roles to individuals within the team. It can be important to point out that this does not mean team members cannot have input into other aspects of their game, the assignment of responsibility simply ensures that all aspects of the game development process are being overseen by someone.

Such as:

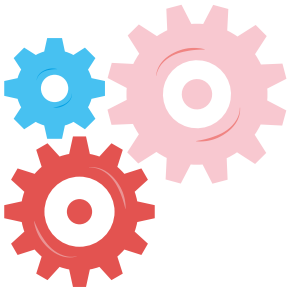


Game Designer

Game Designers help to determine the rules and the structure of the game making sure that players can easily understand how to play the game. They need to think about the gameplay, the goals of the game, the balance of challenges and rewards, feedback to the player, levels and increasing difficulties. Game Designers may need to be good communicators, helping to guide other members of the team.

Artist/Visual Designer

Artists and Visual Designers are responsible for the look and graphic design of the game, ensuring it is consistent throughout the game. Artists and Visual Designers are generally creative with an ability to visually represent concepts or ideas, and take responsibility for the overall graphic style and appeal of a game.



Programmer

Programmers make the game work! They write the code, scripts and mechanisms that make the game functional and playable. Programmers are responsible for functionality and many of the technical aspects of game development.

Storyteller

Storytellers contribute to the narrative that underpins the game. They are responsible for providing the game with environments, characters, motivation and context. Storytellers are driven by player engagement - they think about what is happening in the game, how the story will progress through the game, and how the progression will help to encourage/challenge the player to continue playing.

Sound & Musical Effects

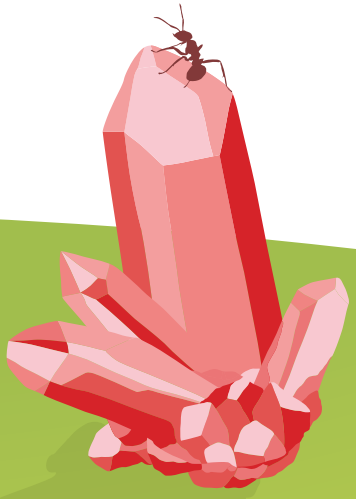
Sound and music can heighten the game play and bring the world of the game to life. Music can bring an emotional element to the game, while sound can add a dynamic atmosphere. Original sound and music can make a good game great!

Tester

The Tester is responsible for testing the game and ensuring that there are no glitches or technical problems. Tester's play a valuable role in ensuring that games are functional, engaging and enjoyable. They provide insights on how the game feels to play, and the player experience.

(NB: It is recommended that you test your game with a person not connected to the build and design of the game – someone fresh will pick up problems that those who understand the game will not!)

Remember: Team members work together and support each other! It is a common occurrence for roles to overlap and, in small teams, for members to perform more than one role. The key to working well as a team is communication and cooperation –working together to achieve a number of smaller goals that produce one fantastic game!



GAME DESIGN DOCUMENTS

As part of your entry for the Australian STEM Video Game Challenge, your team(s) will need to submit a Game Design Document (GDD) a Game Design Document is a planning tool used by game development professionals to identify and map out the key elements of a game before it goes into production. Do not underestimate the value of a good GDD to a winning game! The best game ever created could be submitted, but if it doesn't have a good GDD it will not win!

The judges will review the GDD as they play the submitted game, they want to see what went wrong, what went right and how your team(s) moved through the development process:

- How did they resolve a coding problem?
- Why does a key character look the way it does?
- Why does that character action sound like that?
- What did they set out to achieve?
- How did it change over time?

A good GDD will answer questions just like these and show the judges the development process undertaken.

It's useful to think of it as a proposal outlining:

- what the game will be about (narrative/story)
- who it is intended for (audience)
- how it will work (gameplay mechanics)
- what the requirements are (technical considerations)
- how it will look (artwork/graphics)
- how long it will take to make (timeline)
- what resources are required (capability)

Game Design Documents are highly descriptive, and serve as a way of organising efforts within a development team; helping to keep each member of the team, and each area of responsibility working toward a common vision or goal.

Game Design Documents are also working documents, updated to reflect any changes that may occur throughout the development process.

Timelines, for example, may change several times during the course of developing a game, causing a need for other elements to be produced faster or slower, or a change in the amount of resources required to achieve something within a given timeframe.

How a game looks also tends to change significantly throughout the process; moving from rough sketches into refined artwork and finally into the finished assets that are used in the final version of the game.

Game Design Documents help to create a plan, and help to keep track of the way the plan is carried out.

You can download the GDD template from **www.stemgames.org.au/files/STEM_GDD.pdf**

Parent/Guardian permission

Mentors are asked to ensure that all participating registrants have the permission of their parent/guardian to enter and participate in the STEM Video Game competition.

Please send the permission slip home and once signed hold on to them for the duration of the competition. In the unlikely event that ACER requests copies, the permission slips must be provided to ACER via the STEM Video Game office. Such requests will be made in writing by email.

You can download and print copies of the permission slip from the STEM games website: https://www.stemgames.org.au/ **Go to the section for Teacher/Parents.**

CLASSIFICATION GUIDELINES

All games submitted for judging in the Australian STEM Video Game Challenge must adhere to the following guidelines regarding content and themes.

These guidelines are based on both the Guidelines for the Classification of Computer Games in Australia, as well as the recommendations expressed in the rating categories of the Entertainment Software Rating Board (ESRB).

1. **All games entered must be suitable for play by all age groups, and must conform to the 'G' rating descriptor as issued by the Australian Classification Board, and the 'E' or 'Everyone' rating descriptor as issued by the Entertainment Software Rating Board.**

Content is generally suitable for all ages. May contain minimal cartoon, fantasy or mild violence and/or infrequent use of mild language.

http://www.esrb.org/ratings/ratings_guide.aspx

The content is very mild in impact.

The G classification is suitable for everyone.

G products may contain classifiable elements such as language and themes that are very mild in impact.

http://www.classification.gov.au/Guidelines/Pages/G.aspx

2. **In addition to conforming to the above 'E' and 'G' rating descriptors, all games entered must comply with the following specific expectations with regard to game content:**

i. Violence

Very mild, comical violence is acceptable but any violence depicted in the game must:

- have a low sense of threat or menace,
- contain no use of visible blood or gore,
- be justified by context, and;
- must not be realistic in nature, or imitate any real-life scenario.

ii. Sex

Games shall contain no references (implicit or implied) to sexual activity of any kind.

iii. Language

Games shall contain no profane, crude or coarse language of any kind. This includes colloquial terms, slang terms and profanity in languages other than English. Games must not contain any content that is defamatory.

Games must not contain any language which is unlawful or which violates laws regarding harassment, discrimination, racial vilification, privacy or contempt.

iv. Drug Use

Games shall contain no references (implicit or implied) to drug use of any kind. Please note that this includes illicit and illegal substances, prescribed drugs and legalized drugs (such as caffeine, nicotine and alcohol).

v. Nudity

Games shall contain no nudity of any kind.

vi. Themes

Games must not endorse, suggest or advocate for any of the following additional themes:

- Gambling (simulated or otherwise)
- Discrimination of any kind
- Illegal activity of any kind
- Impersonation of specific real life people, including public figures.

vii. Games submitted for judging in the Australian STEM Video Game Challenge:

- must not contain any intellectual property, including footage, images, artwork, programming or sounds that are not created by the Applicant unless such content is included as part of the Game Engine; and
- must be solely the Applicant's original work and must not be created in collaboration with any other individual or entity

Breaching, or failing to comply with these classification guidelines may result in disqualification of the entry.

In circumstances where these guidelines have been severely breached or ignored, the Australian STEM Video Game Challenge may notify the Parents/Guardians or listed school contact of the entrant(s) and provide particulars of the offending material.

OFFICIAL RULES

The Australian STEM Video Game Challenge (the Challenge) is administered by The Australian Council for Educational Research Ltd (ABN 19 004 398 145) (ACER). The Challenge aims to engage school students in science, technology, engineering and math (STEM), by challenging them to design original video games.

Agreeing to these Rules: By checking the tick box on the registration page and registering to enter the Challenge the Mentor and Applicant(s) agree to abide by these Rules.

1. **Eligibility**

   The Challenge is open to:

   - individuals; or
   - teams consisting of between two (2) to four (4) individuals. Teams must not exceed four (4) members (**Team**).

2. **Applicants**

   All Applicants must:

   - have a nominated adult [18+] to be the contact person between the Challenge administration team and the Applicant (**Mentor**);
   - be Australian citizens or Australian residents;
   - be enrolled in year 5 - 12 in a school located in Australia or are home-schooled in Australia; and
   - have their parents'/legal guardians' permission to participate in the Challenge;

3. **Entry**

   Applicants may enter the Challenge by having the Applicant's Mentor:

   - between **21 February and Midnight (AEST) 24 July 2022**;
   - in accordance with these Rules;
   - complete an online application for registration at **http://www.stemgames.org.au/register**; and
   - collect and hold the parent/guardians' permission to participate. By entering Mentors and Registrants agree to supply these permissions to ACER if requested

4. **Registration**

   Once the Applicant's application for registration has been accepted, the:

   - Mentor will receive confirmation from ACER by email of such acceptance and that the Applicant is now registered with the Challenge (**Registrant**); and
   - Registrant:
     - may, to be considered in the Challenge, submit an original video game and Game Design Document in accordance with the requirements for Submissions set out below in these Rules (**Submission**); and
     - agrees, if its Submission is successful in the Challenge, to its games being displayed for public viewing at:
       - PAX (Penny Arcade Expo) Melbourne held in October of each year;
       - Scienceworks Vic; or
       - at other Science and Technology museums within 12 months of the submission closing date.

5. **Challenge Submissions**

   Submissions must:

   - be only one per Registrant in any one year;
   - be submitted by uploading via www.stemgames.org.au (**Site**) in accordance with the instructions on the Site between **25 July - 5 August 2022;** (and no later);
   - be made in strict accordance with these Rules. Any Submissions not made in strict accordance with these Rules will not be considered;
   - be in the English language;
   - in the form of a playable game made using GODOT, Scratch, Unity3D or another platform (**Game Engine**) which judges can play without needing a paid subscription or license.
   - not contain any intellectual property, including footage, images, artwork, programming or sounds that are not created by the Registrant unless such content is included as part of the Game Engine or is free for public use;
   - be solely the Registrant's original work and must not be created in collaboration with any other individual or entity not registered as part of the Challenge competition or part of the Registrant's Team; and
   - be 'G' rated, and comply with the Australian STEM Video Game Challenge classification guidelines located on page 16 of this handbook;
   - use only the features available in the free tier of the Game Engine or features that are made available specifically for use in the Challenge as specified;
   - not be altered in any way after submission. To do so will result in immediate disqualification.
   - be accompanied by a written Game Design Document (**GDD**):

- detailing the overall creative process and design goals for the game;
- submitted in one of the following file formats: Microsoft Word for Windows, Microsoft Word for Mac, Rich Text Format (RTF), Portable Document Format (PDF) or a plain text file format.
- An editable GDD outline is provided for entrants. It is not compulsory for Registrants to use this specific document, it is however advisable to follow its headings and structure.

6. **Security and release**

   Each Registrant must retain a copy of their Submission. ACER provides no guarantee or warranty as to the confidentiality or security of any Submission. Each Registrant specifically RELEASES ACER from any claims or liability relating to breach of confidentiality or any loss or damage to the Registrant's Submission.

7. **Winning Submissions**

   A prize will be awarded for each Submission judged to be the best in its Category Awarding of prizes will occur in three phases as follows:

   - **Phase One:** judges will review the Submissions to identify those that are complete with a playable, operational game and completed GDD. Submissions that appear to be complete and to satisfy the entry requirements, will automatically be included in Phase Two of the judging.
   - **Phase Two:** judges will review and score all games and GDD's included in Phase Two. Games will be judged based on the weighted criteria of the Game Judging rubric. The GDD will be judged based on the weighted criteria of the GDD judging rubric. Up to five (5) of the highest scoring Submissions in each Category will go through to the final round of judging, Phase Three.
   - **Phase Three:** a panel of judges will review and independently score all games and GDD's. Once again the all Games and GDD's will be judged based on the weighted criteria of the Game and GDD judging rubrics.

   The decision of the judges at each phase of judging is both final and confidential, and no correspondence will be entered into.

8. **Prizes**

   Prizes will be decided at the offices of ACER 19 Prospect Hill Road Camberwell Victoria by the 30 September 2022. The decision as to prizes will be in ACER's absolute and sole discretion and will be final with no correspondence entered into.

   Prizes will consist of a device from our Innovation sponsor, where such a sponsor is present and entered into an agreement with the Australian STEM Video Game Challenge.

   Mentors of winning Submissions will be advised personally via email and phone and will have their name, school and state/territory of residence published on the STEM Games website.

   Should any winning Registrant not claim the relevant prize in accordance with the above, the relevant prizes shall be deemed unclaimed and forfeit. Such forfeited prizes or their equivalent monetary value will be retained by ACER for allocation to another Registrant determined in accordance with these Rules.

9. **Disqualification**

   ACER may, in its sole discretion refuse, disqualify any and all Applicants or Registrants from, and prohibit further participation, in the Challenge, if they act in violation of these Rules or in any way, in connection with the Challenge, engages in misconduct. What constitutes misconduct being in the sole discretion of ACER.

10. **Termination**

    If for any reason the Challenge or any part thereof is not able to be conducted ACER may in its sole discretion cancel, terminate, modify or suspend the Challenge, or invalidate any affected applications or registrations, subject to the approval of the relevant gaming authorities, if required.

11. **Intellectual Property**

    The intellectual property in any Submission created by any Registrants remains vested in the relevant Registrant.

12. **License**

    Registrants grant ACER and its personnel, contractors and agents an irrevocable, worldwide, non-exclusive, royalty free, fully paid up LICENCE (including the right to sublicense) to use, publish, reproduce, communicate and broadcast the Submission and any other material the Applicant supplies ACER for the purposes of the Challenge and the intellectual property in the same for the purposes of: the Challenge; to conduct of future Challenges; and for purposes directly or indirectly related to the Challenge and future Challenges.

13. **Moral rights consent and waiver**

    Registrants IRREVOCABLY CONSENT to (or waive any rights in respect of) ACER or its agents or licensees performing any act or making any omission relating to their Submission concerning attribution of authorship (whether correctly attributed or not) or its use in connection the Challenge in any context.

14. **Warranties**

Registrants WARRANT:

- that Registrant has the sole and full right and authority to accept these terms and conditions and enter into the Challenge and grant the rights set out in this Agreement;
- the Submission will be made by the Registrant solely and specifically for the Challenge or as part of another educational activity undertaken within an educational environment;
- the Submission will comply with these Rules;
- no part of the Submission is, or will be, actionable for defamation or violate any right of privacy or publicity of any person, and the full use of the rights in the Submission will not violate any rights of any person, firm or corporation;
- that they have obtained all necessary rights, licences, permissions and consents in respect of any third party material included in any Submission to use such third party material for the purposes of the Challenge and for ACER and its personnel, contractors and agents to use, sublicense, publish, reproduce, communicate and broadcast for the purposes of the Challenge, conduct of future Challenges and purposes directly or indirectly related to such any third party material on a worldwide, non-exclusive, royalty free, fully paid up and irrevocable basis (consents shall include moral rights consents (and where applicable waivers) for the commission or omission of any act that may otherwise constitute an infringement of a third party's moral rights); and
- the Submission is not the subject of any litigation nor is it threatened by any claim or litigation.

15. **Indemnity**

Registrants INDEMNIFY, RELEASE and HOLD HARMLESS ACER and its related companies, personnel, contractors and agents on a continuing basis in respect of any loss, expense, cost (on a full indemnity basis) or damages arising as a result of any claim or threatened claim by an Registrant or a third party that its intellectual property rights or moral rights have been infringed as a result of any activity or omission of ACER, its related companies, personnel, contractors, agents and the Applicant in connection with the Challenge.

16. **Limitation of Liability**

ACER makes no representations or warranties as to the quality, suitability or merchantability of any goods or services offered as prizes. To the extent permitted by law, ACER is not liable for any loss suffered to person or property by reason of any act or omission, deliberate or negligent, by ACER or its employees or agents, in connection with the arrangement for the supply, or the supply, of goods and services by any person to the prize winner and, where applicable, to any persons accompanying the prize winner. This clause does not affect any rights a consumer may have which are unable to be excluded under Australian law. To the fullest extent permitted by law, any liability of ACER or its employees or agents for breach of any such rights is limited to the payment of the costs of having the prize supplied again.

17. **Privacy**

By entering the Challenge Mentors and Registrants CONSENT to ACER:

- Collecting and recording their personal information (including sensitive information such as ethnic origin or health information) provided by the Mentor or Registrant;
- publishing the winning Registrant's name, images, school name and state/territory of residence in such promotional activity and materials as ACER may require;
- using Mentor's and Registrant's personal information provided for:
  - the administration and evaluation of current and future Challenges;
  - direct marketing purposes;
  - disclosing personal information (including sensitive information) to its contractors, agents and other persons for the purpose of them assisting ACER with administration of the current and future Challenges.

Should Mentor or Registrant not wish to consent to the any or all of the above please contact the STEM Video Game Challenge Project Director in writing by email to **contact@stemgames.org.au**

Each time ACER sends Mentors or Registrants direct marketing communication ACER will provide them with a simple way to 'opt out' of receiving similar communications in the future. Mentors and Registrants may also inform ACER that they do not wish to receive any further communications or change any personal information ACER may have on record by contacting STEM Video Game Challenge in writing by email to **contact@stemgames.org.au**

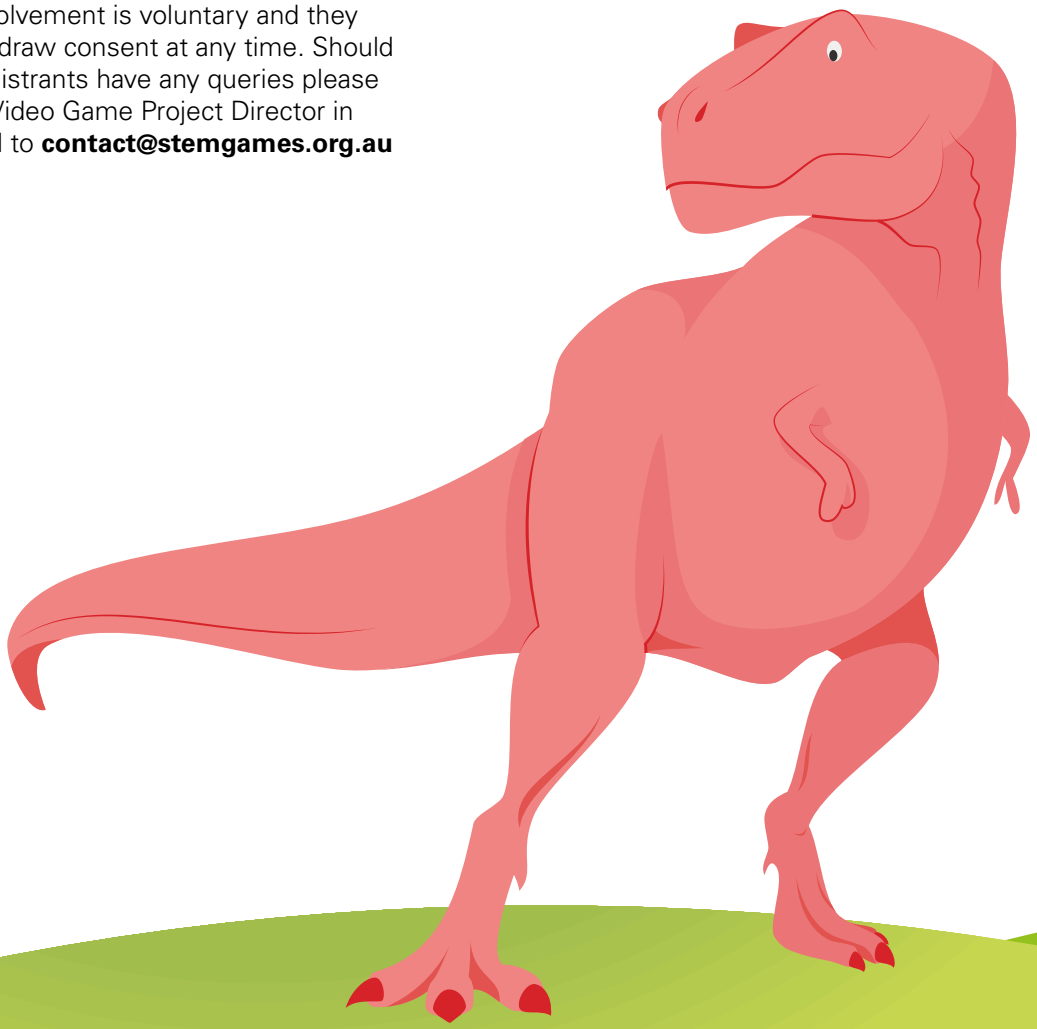
18. **Privacy Statement**

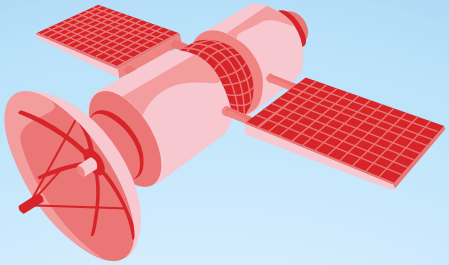
Any Personal Information Mentors or Registrants provide is private, confidential and will be treated according to any applicable law. Such Personal Information will only be used for the purposes specified in these Rules. Should the Mentor or Registrant not provide the personal information required for the Challenge or give the consents above then any application for registration or submission may not be considered for the purposes of participating in the Challenge.

ACER is bound to comply with the Privacy Act 1988 (Cth) and its ACER Privacy Policy is locatable at **www.acer.edu.au/about/acer-privacy-policy**.

ACER will not disclose Mentor's or Registrant's personal information to any person or organisation located overseas.

The policy sets out the Mentor's and Registrant's rights and processes to: complain about a breach of privacy: access and have amended their personal information held by ACER. Mentor's and Registrant's involvement is voluntary and they are free to withdraw consent at any time. Should Mentors or Registrants have any queries please contact STEM Video Game Project Director in writing by email to **contact@stemgames.org.au**





AUSTRALIAN STEM

VIDEO GAME CHALLENGE

WWW.STEMGAMES.ORG.AU