

**CURRICULUM ALIGNMENT &
CLASSROOM RESOURCES**
**THE GREENHOUSE INNOVATOR
COMPETITION**
Supported by integratedSTEM



GRADE 7 - 10

COMPETITION OVERVIEW

The Greenhouse Innovator Competition provides a technology driven immersive project where selected school groups from grades 7 – 10 conduct experiments facilitated by integratedSTEM. Students are required to use Greenhouse Innovator kits to monitor plant growth and analyse the data they collect. The kits can be purchased through IntegratedSTEM and are reusable.

The experiment and data collection portion of the project will take place across a 4–6 week period. Following this, student groups will draw conclusions from their data and prepare a research poster and supporting video presentation to communicate their findings.

Once the project is finalised and supporting elements are submitted, a panel of judges will deliberate and award the top three entries based on judging criteria supplied to the schools by integratedSTEM.

IMPORTANT CONTACTS

integratedSTEM Education Enquiries

info@integratedstem.com.au

General Ekka Education Content Enquiries

education@ekka.com.au

Ekka School & Group Bookings Enquiries

groupbookings@ekka.com.au

COMPETITION DETAILS

STAGE 1

Classes selected to participate are contacted by integratedSTEM to confirm competition involvement and requirements.

STAGE 2

Equipment will be sent out when purchased from [integratedSTEM](#). Once delivered, the class will receive ongoing support from the integratedSTEM team to conduct the project successfully throughout the 4-6 week data collection phase.

STAGE 3

Once students with the assistance of integratedSTEM, have collected data they will then process their findings to draw conclusions that will form their final poster and video presentation submission.

STAGE 4

Once the finalised projects and supporting elements are submitted, a panel of judges will deliberate and award the winning groups based on judging criteria supplied to the schools by integratedSTEM.



PRIZE DETAILS

All students that submit their final poster and supporting video will receive complementary tickets to Ekka 2024.

CATEGORY YEARS 7 & 8 PRIZE:

Trophy, and Sash

CATEGORY YEARS 9 & 10 PRIZE:

Trophy, and Sash

ENTRY:

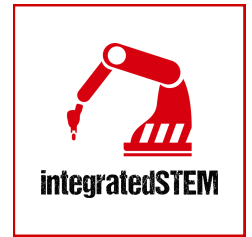
All participating students and teachers will receive a complimentary entry ticket to the 2025 Royal Queensland Show (Ekka). Entry tickets are valid for one entry per person per day.

*Submissions from groups will be judged in two separate categories. Submissions from groups in Years 7 & 8 will be grouped into one category, and submissions from entrants in Years 9 & 10 will be judged in another category. This will be reflected in the judging criteria.

CLASSROOM RESOURCES

integratedSTEM - AgTech Education Experts

The AgTech kits will be supported by integratedSTEM's classroom resources and tech support sessions.



SUPPORTING RESOURCES

OECD (Organisation for Economic Co-Operations and Development)

How will the global food, agriculture and fisheries system evolve in coming decades? A lot will depend on government policies.

<https://www.oecd.org/en/topics/agriculture-and-fisheries.html>



Freethink - Hard Reset: Vertical farms could take over the world*

Vertical farming offers better tasting, more sustainable produce. Will it take over farming as we know it?

<https://www.freethink.com/series/hard-reset/vertical-farming>



VERSION 8.4

Science as a Human Endeavour:

Nature and development of science

Scientific knowledge has changed peoples' understanding of the world and is refined as new evidence becomes available ([ACSHE119](#))

People use science understanding and skills in their occupations, and these have influenced the development of practices in areas of human activity ([ACSHE121](#))

Science Inquiry Skills:

Questioning and predicting

Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge ([AC SIS124](#))

Planning and conducting

Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed ([AC SIS125](#))

Measure and control variables, select equipment appropriate to the task and collect data with accuracy ([AC SIS126](#))

Processing and analysing data and information

Construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships in data using digital technologies as appropriate ([AC SIS129](#))

Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions based on evidence ([AC SIS130](#))

Evaluating

Reflect on scientific investigations including evaluating the quality of the data collected, and identifying improvements ([AC SIS131](#))

Communicating

Communicate ideas, findings and evidence based solutions to problems using scientific language, and representations, using digital technologies as appropriate ([AC SIS133](#))



*Creative & Critical
Thinking*



Literacy



Numeracy



Digital Literacy



*Personal &
Social Capability*



*Ethical
Understanding*



VERSION 9***Science Understanding:******Biological Sciences***

Use models, including food webs, to represent matter and energy flow in ecosystems and predict the impact of changing abiotic and biotic factors on populations.

([AC9S7U02](#))

Nature and development of science

Explain how new evidence or different perspectives can lead to changes in scientific knowledge ([AC9S7H01](#))

Science Inquiry:***Questioning and predicting***

Develop investigable questions, reasoned predictions and hypotheses to explore scientific models, identify patterns and test relationships ([AC9S7I01](#))

Processing, modelling and analysing

Select and construct appropriate representations, including tables, graphs, models and mathematical relationships, to organise and process data and information ([AC9S7I04](#))

Evaluating

Analyse methods, conclusions and claims for assumptions, possible sources of error, conflicting evidence and unanswered questions ([AC9S7I06](#))

Communicating

Write and create texts to communicate ideas, findings and arguments for specific purposes and audiences, including selection of appropriate language and text features, using digital tools as appropriate. ([AC9S7I08](#))



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Thinking*



Literacy



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Digital Literacy



Sustainability



VERSION 8.4***Science Understanding:******Biological Sciences***

Cells are the basic units of living things; they have specialised structures and functions ([ACSSU149](#)).

Nature and development of science

Scientific knowledge has changed peoples' understanding of the world and is refined as new evidence becomes available ([ACSHE134](#)).

Science Inquiry Skills:***Questioning and predicting***

Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge ([AC SIS139](#))

Planning and conducting

Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed ([AC SIS140](#)).

Processing and analysing data and information

Construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships in data using digital technologies as appropriate ([AC SIS144](#)).

Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions based on evidence ([AC SIS145](#)).

Evaluating

Reflect on scientific investigations including evaluating the quality of the data collected, and identifying improvements ([AC SIS146](#)).

Communicating

Communicate ideas, findings and evidence based solutions to problems using scientific language, and representations, using digital technologies as appropriate ([AC SIS148](#)).



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VERSION 9***Science Understanding:******Biological Sciences***

Analyse the relationship between structure and function of cells, tissues and organs in a plant and an animal organ system and explain how these systems enable survival of the individual ([AC9S8U02](#))

Chemical sciences

Compare physical and chemical changes and identify indicators of energy change in chemical reactions ([AC9S8U07](#))

Questioning and predicting

Develop investigable questions, reasoned predictions and hypotheses to explore scientific models, identify patterns and test relationships ([AC9S8I01](#))

Planning and Conducting

Select and use equipment to generate and record data with precision, using digital tools as appropriate ([AC9S8I03](#))

Processing, modelling and analysing

Select and construct appropriate representations, including tables, graphs, models and mathematical relationships, to organise and process data and information ([AC9S8I04](#))

Communicating

Write and create texts to communicate ideas, findings and arguments for specific purposes and audiences, including selection of appropriate language and text features, using digital tools as appropriate ([AC9S8I08](#))

***Creative & Critical Thinking******Literacy******Numeracy******Digital Literacy***

VERSION 8.4***Science as a Human Endeavour:******Nature and development of science***

Scientific understanding, including models and theories, is contestable and is refined over time through a process of review by the scientific community ([ACSHE157](#))

Advances in scientific understanding often rely on technological advances and are often linked to scientific discoveries ([ACSHE158](#))

Use and influence of science

People use scientific knowledge to evaluate whether they accept claims, explanations or predictions, and advances in science can affect people's lives, including generating new career opportunities ([ACSHE160](#))

Science Inquiry Skills:***Questioning and predicting***

Formulate questions or hypotheses that can be investigated scientifically ([AC SIS164](#))

Planning and conducting

Plan, select and use appropriate investigation types, including field work and laboratory experimentation, to collect reliable data; assess risk and address ethical issues associated with these methods ([AC SIS165](#))

Select and use appropriate equipment, including digital technologies, to collect and record data systematically and accurately ([AC SIS166](#))

Processing and analysing data and information

Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies ([AC SIS169](#))

Communicating

Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations ([AC SIS174](#))



*Creative & Critical
Thinking*



Literacy



Numeracy



*Ethical
Understanding*



VERSION 9

Science Understanding:

Biological Science

Describe the form and function of reproductive cells and organs in animals and plants, and analyse how the processes of sexual and asexual reproduction enable survival of the species. ([AC9S9U02](#))

Physical sciences

Use wave and particle models to describe energy transfer through different mediums and examine the usefulness of each model for explaining phenomena. ([AC9S9U04](#))

Science as a Human Endeavour:

Nature and development of science

Investigate how advances in technologies enable advances in science, and how science has contributed to developments in technologies and engineering. ([AC9S9H02](#))

Science Inquiry:

Questioning and predicting

Develop investigable questions, reasoned predictions and hypotheses to test relationships and develop explanatory models. ([AC9S9I01](#))

Planning and conducting

Select and use equipment to generate and record data with precision to obtain useful sample sizes and replicable data, using digital tools as appropriate ([AC9S9I03](#))

Processing, modelling and analysing

Select and construct appropriate representations, including tables, graphs, descriptive statistics, models and mathematical relationships, to organise and process data and information ([AC9S9I04](#))

Communicating

Write and create texts to communicate ideas, findings and arguments effectively for identified purposes and audiences, including selection of appropriate content, language and text features, using digital tools as appropriate. ([AC9S9I08](#))



*Creative & Critical
Thinking*



Literacy



Numeracy



Digital Literacy



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Social Capability*



*Ethical
Understanding*



VERSION 8.4***Science Understanding:******Biological sciences***

The theory of evolution by natural selection explains the diversity of living things and is supported by a range of scientific evidence ([ACSSU185](#))

Earth and space Science

Global systems, including the carbon cycle, rely on interactions involving the biosphere, lithosphere, hydrosphere and atmosphere ([ACSSU189](#))

Science as a Human Endeavour:***Use and influence of science***

People use scientific knowledge to evaluate whether they accept claims, explanations or predictions, and advances in science can affect people's lives, including generating new career opportunities ([ACSHE194](#))

Science Inquiry Skills:***Questioning and predicting***

Formulate questions or hypotheses that can be investigated scientifically ([AC SIS198](#))

Planning and conducting

Plan, select and use appropriate investigation types, including field work and laboratory experimentation, to collect reliable data; assess risk and address ethical issues associated with these methods ([AC SIS199](#))

Processing and analysing data and information

Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies ([AC SIS203](#))

Use knowledge of scientific concepts to draw conclusions that are consistent with evidence ([AC SIS204](#))

Communicating

Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations ([AC SIS208](#))

***Creative & Critical
Thinking******Literacy******Numeracy******Digital Literacy***

VERSION 9***Science Understanding:******Biological sciences***

Use the theory of evolution by natural selection to explain past and present diversity and analyse the scientific evidence supporting the theory ([AC9S10U02](#))

Science as a human Endeavour:***Nature and development of science***

Investigate how advances in technologies enable advances in science, and how science has contributed to developments in technologies and engineering ([AC9S10H02](#))

Science inquiry Skills:***Questioning and predicting***

Develop investigable questions, reasoned predictions and hypotheses to test relationships and develop explanatory models ([AC9S10I01](#))

Processing, modelling and analysing

Select and construct appropriate representations, including tables, graphs, descriptive statistics, models and mathematical relationships, to organise and process data and information ([AC9S10I04](#))

Evaluating

Assess the validity and reproducibility of methods and evaluate the validity of conclusions and claims, including by identifying assumptions, conflicting evidence and areas of uncertainty ([AC9S10I06](#))

Communicating

Write and create texts to communicate ideas, findings and arguments effectively for identified purposes and audiences, including selection of appropriate content, language and text features, using digital tools as appropriate ([AC9S10I08](#))



*Creative & Critical
Thinking*



Literacy



Numeracy



Digital Literacy



*Personal &
Social Capability*



VERSION 8.4

Investigate the ways in which products, services and environments evolve locally, regionally and globally and how competing factors including social, ethical and sustainability considerations are prioritised in the development of technologies and designed solutions for preferred futures ([ACTDEK029](#))

Analyse how motion, force and energy are used to manipulate and control electromechanical systems when designing simple, engineered solutions ([ACTDEK031](#))

Analyse how food and fibre are produced when designing managed environments and how these can become more sustainable ([ACTDEK032](#))

Critique needs or opportunities for designing and investigate, analyse and select from a range of materials, components, tools, equipment and processes to develop design ideas ([ACTDEP035](#))

Independently develop criteria for success to evaluate design ideas, processes and solutions and their sustainability ([ACTDEP038](#))

VERSION 9

Analyse how people in design and technologies occupations consider ethical and sustainability factors to design and produce products, services and environments. ([AC9TDE8K01](#))

Analyse needs or opportunities for designing, and investigate and select materials, components, tools, equipment and processes to create designed solutions. ([AC9TDE8P01](#))

Generate, test, iterate and communicate design ideas, processes and solutions using technical terms and graphical representation techniques, including using digital tools. ([AC9TDE8P02](#))

Select, justify and use suitable materials, components, tools, equipment, skills and processes to safely make designed solutions. ([AC9TDE8P03](#))

Develop design criteria collaboratively including sustainability to evaluate design ideas, processes and solutions. ([AC9TDE8P04](#))



*Creative & Critical
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Understanding*



Sustainability



VERSION 8.4

Critically analyse factors, including social, ethical and sustainability considerations, that impact on designed solutions for global preferred futures and the complex design and production processes involved ([ACTDEK040](#))

Investigate and make judgements on the ethical and sustainable production and marketing of food and fibre ([ACTDEK044](#))

Investigate and make judgements on how the characteristics and properties of materials are combined with force, motion and energy to create engineered solutions ([ACTDEK043](#))

Evaluate design ideas, processes and solutions against comprehensive criteria for success recognising the need for sustainability ([ACTDEP051](#))

Critique needs or opportunities to develop design briefs and investigate and select an increasingly sophisticated range of materials, systems, components, tools and equipment to develop design ideas ([ACTDEP048](#))

Develop, modify and communicate design ideas by applying design thinking, creativity, innovation and enterprise skills of increasing sophistication ([ACTDEP049](#))

Evaluate design ideas, processes and solutions against comprehensive criteria for success recognising the need for sustainability ([ACTDEP051](#))

VERSION 9

Analyse and make judgements on the ethical, secure and sustainable production and marketing of food and fibre enterprises. ([AC9TDE10K04](#))

Analyse needs or opportunities for designing; develop design briefs; and investigate, analyse and select materials, systems, components, tools and equipment to create designed solutions. ([AC9TDE10P01](#))

Apply innovation and enterprise skills to generate, test, iterate and communicate design ideas, processes and solutions, including using digital tools. ([AC9TDE10P02](#))

Develop design criteria independently including sustainability to evaluate design ideas, processes and solutions. ([AC9TDE10P04](#))



Creative & Critical Thinking



Literacy



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Digital Literacy



Personal & Social Capability



Ethical Understanding



Sustainability



Ekka

EDUCATION

INTERNATIONAL AWARD WINNERS

The Royal Queensland Show (Ekka) is recognised for its excellence, over many years, by winning numerous awards at the International Fairs & Expos (IAFE) Awards.

IAFE has more than 1,000 members representing agricultural fairs from the United States, Canada, the United Kingdom, and Australia.

These awards represent the continued dedication the Ekka plays in bridging the country city divide, and educating the next generation on the essential role farming and agriculture plays in their everyday lives.

