STEAM

CREATIVITY IS EVERYWHERE

Exploring Creative Skills in Key Stages 3 and 4

Dialogue and Collaboration in STEAM...

Dialogue, questioning, communication and collaborating in both verbal and embodied ways.

	For Example:
• Use specific technical vocabulary to pose and respond to questions to find and solve problems or to analyse solutions.	When discussing a design brief, finding out about constraints and working in teams.
• Communicating ideas and solutions, including through new technologies.	Using drawings and symbols to communicate design ideas, including CAD to share 3D models.
• Work individually, collaboratively and part of a community to find the best solutions to the problems set.	When working to a brief set by industry or by us, working with and for a client.
• Negotiate differences and respond appropriately.	Discussing a variety of design options, materials and manufacturing methods. When negotiating team roles.

Honing and Developing an Idea in STEAM...

Develop creative ideas, incorporating self-reflection, development of techniques and understanding of the rules and persistence.

	For Example:
• Analyse, evaluate and consider alternatives to develop and improve ideas.	Engineering cycle: Ask, Imagine, Plan, Create, Improve.
• Understand rules and consequences being persistent and tolerant with logical reasoning.	Understanding the tools and techniques we use, their limitations and the impacts of them on our designs and vice-versa.
• Reflect on the results to develop techniques.	Recognising there is more than one solution and that some solutions are not appropriate for a particular problem.

Created within Penryn Creativity Collaborative 2021-2024. Penryn Partnership Project lead: Sarah Childs; University of Exeter team: Kerry Chappell & Ursula Crickmay.

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Empowered Action in STEAM...

Foreground pupils' own agency in creative actions, the ability to take risks and question accepted ideas, be immersed and the act on ideas.

	For Example:
• Take ownership and act on their ideas.	When applying knowledge and skills to solve problems, making a product, completing their role within a team.
• With support take creative risks and make mistakes to develop ideas accepting potential failure.	Making a prototype and testing it's function. Trying new mechanisms and processes.
• Be self-motivated and immersed in an activity.	Working with an industry partner to produce a viable product. Taking on a role and being that person.

Being Imaginative and Playful in STEAM...

Use imagination, improvise playfully, and generate and try out possibilities with the ability to go beyond an understanding of 'what is' to consider 'what might be.'

	For Example:
• Use their imagination to go beyond with curiosity.	Use clay, card modelling, sketches, design drawings and computer simulation to play with different options, including motion types, colour palette, electrical solutions and coding options to fit the design brief.
• Consider possibilities within a context.	When learning about impacts of new technology, considering what might come next, AI for example.
• Purposefully play with possibilities and try new things out.	Trial and improvement: Iteration of design ideas using the engineering cycle to get to the best solution.

Generating Ideas that Matter in STEAM...

Combine innovation with critical attention to the consequences of ideas, the ethical impact of actions and understanding diverse values.

	For Example:
• Consider ethical consequences.	Solving real-world problems when considering impact of technological advances, for example electric vehicles, plastics, batteries.
• Explore, generate and combine ideas that are new to them.	Trialing and selecting the most efficient mechanism, adding control systems to a product.
• Understand diverse values and how they matter differently.	When evaluating a product life cycle, or the impact of modern technologies like AI.

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