'Creativity in education: what educators need to know' by John Munro

A practical guide to help teachers turn creative thinking theory into practice

Introduction

This practical guide draws out key points from a 2019 paper developed for the department by Professor John Munro, 'Creativity in education: What educators need to know.' For the full paper, please visit www.education. nsw.gov.au/teaching-and-learning/ education-for-a-changing-world.

Professor Munro's paper forms part of a larger collection providing different expert perspectives on how students' creative thinking skills can be developed through school education. Related publications include the first issue of Future EDge, Edspresso podcast interviews with Dr Ronald Beghetto and Rooty Hill High School Principal Christine Cawsey, and a conversation starter on thinking skills and their increasing importance.

Thinking skills including critical and creative thinking, metacognition and ethical reasoning enable students to deeply understand and apply the curriculum – and prepare them for a lifetime of learning.

Paper overview

Creativity and innovation have attracted increasing interest in recent years as key 21st century skills (Binkley et al., 2012). In this paper, John Munro considers how we can identify, foster and measure creativity in young learners, and describes what the creative process can look like.

Munro puts forward his Intuitive Theory of Action (ITA) to explain the important point in the creative process at which an individual becomes aware of new possibilities, and develops a potential solution to a problem posed. ITAs are an intuitive leap informed by the student's research and deep thinking. They may contain inaccuracies, unanswered questions and ambiguity, and personal and subjective content. The art of teaching which encourages creativity is to ask questions which help the student (using a try, test, learn process) to either shift their ITA from something uncertain into a well-informed, practical solution or idea, or discard it.

Munro also examines how creativity can be measured in a variety of ways: including standardised tasks and tests, self-assessment of creative attributes, and assessment of outcomes intended to show creativity. He offers practical and integrated suggestions to help teachers gauge students' creative thinking abilities.

As an example of how teachers can recognise and measure creative thinking in the classroom, Munro sets out how Year 8 student Gina developed her own ITA about how the stomach regulates acid production to ensure food is broken down without causing ulcers. He also provides a number of useful examples of creative outcomes in the classroom, including in creative arts, reading and STEM.

What is creativity?

The Australian Curriculum and OECD define creativity as the act of producing something which is both novel and functional or useful in solving a particular problem. The outcome can be a product, theory or process. Giving students the opportunity to solve open-ended, real-life problems provides them with explicit and structured experience working in the space of uncertainty – increasingly recognised as necessary for personal and professional success. As a way of thinking which results in useful outcomes, creativity can be applied to all of the key learning areas (KLAs) including those not always seen as 'creative,' such as mathematics, economics and history.

In the Australian Curriculum, creativity is identified in the critical and creative thinking general capability. While the two skills are different – critical thinking does not necessarily include the generation of new possibilities, for example – they are closely linked. Critical thinking can support the creative thinking process by helping students to decide when creativity is

appropriate and consider the potential impact of their ideas so that they lead to beneficial outcomes (Beghetto, 2020).
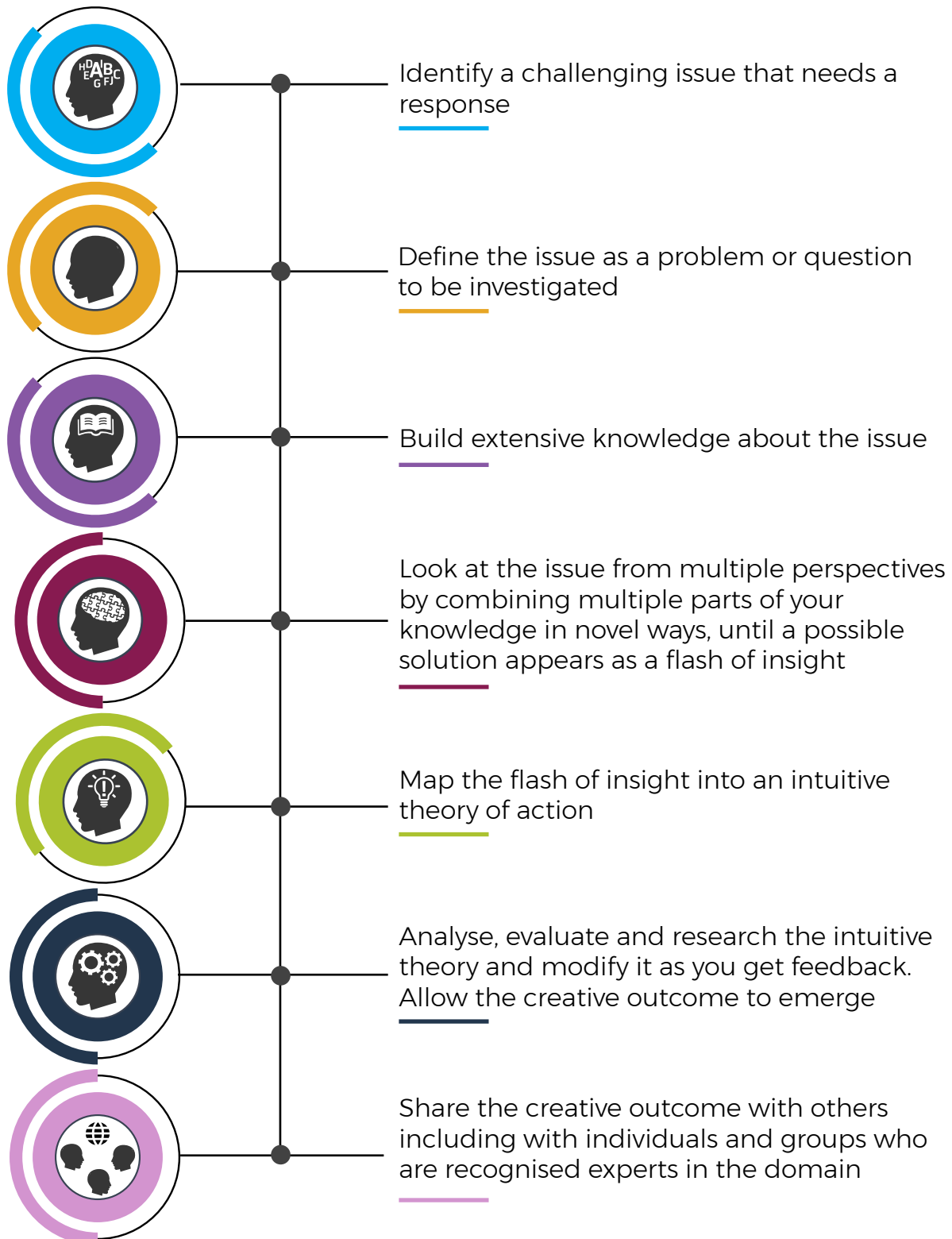
Types of creativity: the Four C Model

Munro points to Kaufman and Beghetto's Four C model (e.g. Beghetto, 2020) to describe the kinds of creativity that can exist: with 'Little-c' and 'Mini-c' creativity the types most commonly found in the classroom.

1. **Big-c** – creative solutions which change in substantial ways how a society knows, thinks, feels and lives (e.g. the internet, mobile phones, theory of relativity, the paintings of Picasso)

2. **Little-c** – creative solutions to problems experienced on a day-to-day level (e.g. creating a new recipe, figuring out how to glue something back together again or solve a dispute)

3. **Mini-c** – personal learning about the creative process unique to the individual but resulting in their increased capacity to deliver creative outcomes (e.g. if I do this, this will happen, a sudden understanding of algebra)

4. **Pro-c** – creative solutions that lie somewhere between Big-c and Little-c creative outcomes (e.g. next generation iPhones).

The creative process

Munro suggests that the following steps make up the creative process.

Identify a challenging issue that needs a response

Define the issue as a problem or question to be investigated

Build extensive knowledge about the issue

Look at the issue from multiple perspectives by combining multiple parts of your knowledge in novel ways, until a possible solution appears as a flash of insight

Map the flash of insight into an intuitive theory of action

Analyse, evaluate and research the intuitive theory and modify it as you get feedback. Allow the creative outcome to emerge

Share the creative outcome with others including with individuals and groups who are recognised experts in the domain

The creative process model in the classroom: a stepped out approach for students

1. Identify the specific challenge to be solved

2. Express that challenge as a specific problem or question to be investigated

3. Develop a deep understanding of content already existing and relating to the challenge

4. Look at the issue from multiple perspectives by combining multiple parts of your knowledge in novel ways, until a possible solution appears as a flash of insight

5. Shape the flash of insight into an ITA (intuitive theory of action)

6. Develop, explore, test, evaluate and modify the ITA or possible way/s of solving the challenge

7. Produce an original product, theory or process which solves the problem posed

8. Seek feedback from others knowledgeable about the problem

9. Return to step 6 and modify

Metacognitive question prompts for students to support their creative process

1. What information do you need to know to be able to solve your problem? Where will you find that information and how will you know that it is 'good' information?

2. Have you had a 'flash of insight' or developed your ITA? What additional information or collaboration might help you 'get there'?

3. Are there people you will need to collaborate with? How will you connect with them and how will you make sure that everyone is 'on the same page'?

4. What are some of the barriers to your being able to build and/or deliver on your solution? How might you overcome these, and could the barriers hep your thinking about a solution?

5. How might your solution or idea affect others? Do you need to modify your solution to help everyone access or use it who might want or need to?

6. How will you encourage people to use your idea or solution? Is there anything else you need to add to your idea to help make sure that people use it?

7. How will you monitor whether your solution has been effective or not? How will you use that information to update or improve your solution or idea?

8. How else might your solution or idea be used in this subject, and in others?

9. What emotions did you experience as you went through the creative process?

10. What is one thing you have learned from your classmates or teacher about how to think creatively? How will you apply this to future challenges in this subject and in others?
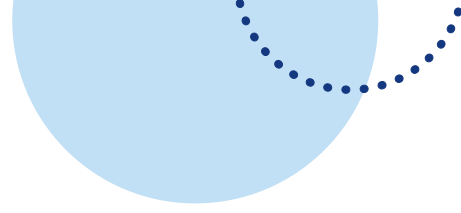
A tool to help assess creativity

The below table includes key elements of the Consensual Assessment Technique (Baer, Kaufmann and Gentile, 2004) – a method of assessing creativity outlined on page 19 of Munro's paper. The tool can be used to help students reflect on their idea or theory as they go through the creative process. It can also be used to support the teacher, or students to peer review each other's work and provide constructive feedback.

Creativity Challenge		
Problem or challenge to be solved:		
Product name/solution:		
Intuitive theory of action:		
Creators:		
Reviewed by:		
Criteria	**Yes/No**	**Improvement suggestions**
1. The product or idea is original		
2. The product or idea is unexpected or novel		
3. The product or idea builds on and makes better existing ideas		
4. The product solves the challenge posed		
5. The product is practical and useful		
6. The product is elegant – and is pleasing to look at or use		
7. The product contributes to, or inspires other ideas		
8. The product or idea makes you go 'wow' or makes you feel impressed or excited		
9. The product is relevant to the needs of different communities of population groups		
10. Anything else		