Introducing the creative domain

Discussion paper for school leaders and teachers – high potential and gifted education P–12

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# Introduction

This paper is a synthesis of research and practice in educating and supporting high potential and gifted students in the creative domain. It has been developed to supplement other [domain discussion papers](https://education.nsw.gov.au/teaching-and-learning/high-potential-and-gifted-education/HPGE-research) and the [Revisiting Gifted Education](https://education.nsw.gov.au/about-us/educational-data/cese/publications/literature-reviews/revisiting-gifted-education) literature review.

The department utilises an adapted version of [Gagné’s Differentiated Model for Giftedness and Talent (DMGT 2.0 2009)](https://education.nsw.gov.au/teaching-and-learning/high-potential-and-gifted-education/HPGE-policy-information#Gagn%C3%A9's3). This model describes talent development within the 4 domains of potential: creative, intellectual, physical and social-emotional.

Students may demonstrate high potential in one or more domains. While this paper focuses on the creative domain, it is important to note that the domains do not stand in isolation but relate to and interact with each other.

As with all domains of potential, high expectations and effective, explicit evidence-based teaching create optimal learning environments where all students are challenged and engaged to achieve their educational potential.



# What is the creative domain?

The NSW Department of Education (2023) defines the [creative domain of potential](https://education.nsw.gov.au/teaching-and-learning/high-potential-and-gifted-education/supporting-educators/assess-and-identify#Signs6:~:text=Transcript-,Signs%20of%20high%20potential,-The%20following%20signs) as natural abilities in imagination, invention and originality. [Signs of high potential](https://education.nsw.gov.au/teaching-and-learning/high-potential-and-gifted-education/supporting-educators/assess-and-identify#tabs1:~:text=Transcript-,Signs%20of%20high%20potential,-The%20following%20signs) in the creative domain may include originality and innovation that have social value in organising:

* ideas
* images
* words
* sound
* movement
* objects (including digital media).

## Creativity

There is limited research specific to the creative domain in Gagné’s Differentiated Model for Giftedness and Talent (DMGT 2.0 2009). However, a wealth of creativity research provides a range of definitions for the processes used in the creative domain. These include creativity and creative thinking.

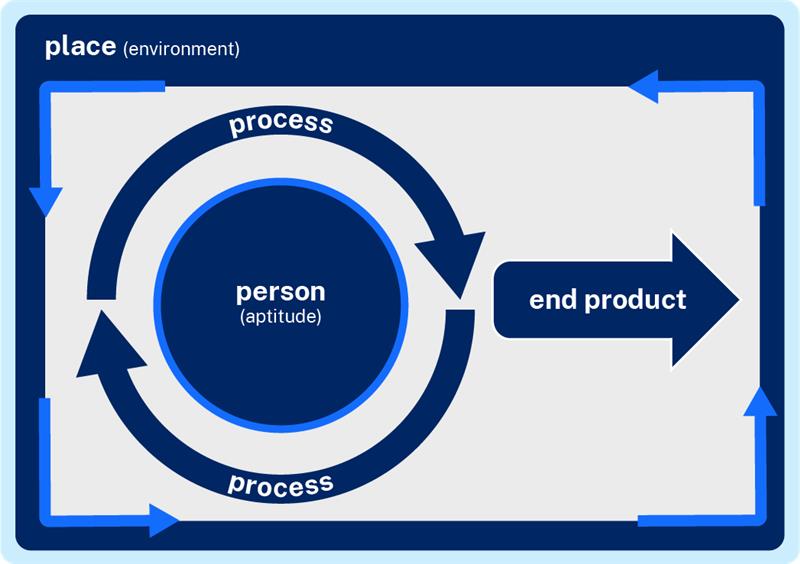
Plucker et al. (2004:90) define creativity as ‘the interaction among aptitude, process, and environment by which an individual or group produces a product that is novel and useful as defined within a social context’.

To provide a framework for teachers in understanding creativity, the department has adapted Plucker et al.’s definition (2004) to encompass the 4Ps:

* person
* process
* place
* products.

This is illustrated in Figure 1.

Figure 1 – adapted version of the 4P model of creativity



The 4P model of creativity explains the interplay between a **person’s** or group’s abilities (aptitude), the creative **process**, and **place** (environment) resulting in novel **products** that have social value or impact. As part of the creative process, many interim products may be produced before an end product is selected. The concept of the 4Ps is recognised in early research into creativity (Torrance 1993).

Creativity is not confined to the performing or creative arts. The interdisciplinary nature of creativity results in multiple perspectives across a range of subject areas and fields of study (Puryear and Lamb 2020). Using a diversity of definitions to capture the range of domain-specific fields across many contexts is complex. Puryear and Lamb (2020) highlight the question: ‘Creativity for whom and for what context?’ Sternberg and Lubart (1999) also reinforce that creative thinking is about the ‘who’ and ‘how’ a solution or an idea is generated, in addition to the ‘what’ or idea.

Some researchers make a distinction between innovation and creativity by suggesting that creativity is thinking about new ideas and deciding which ones are best, while innovation is about implementing these ideas (West 2002; West et al. 2004).

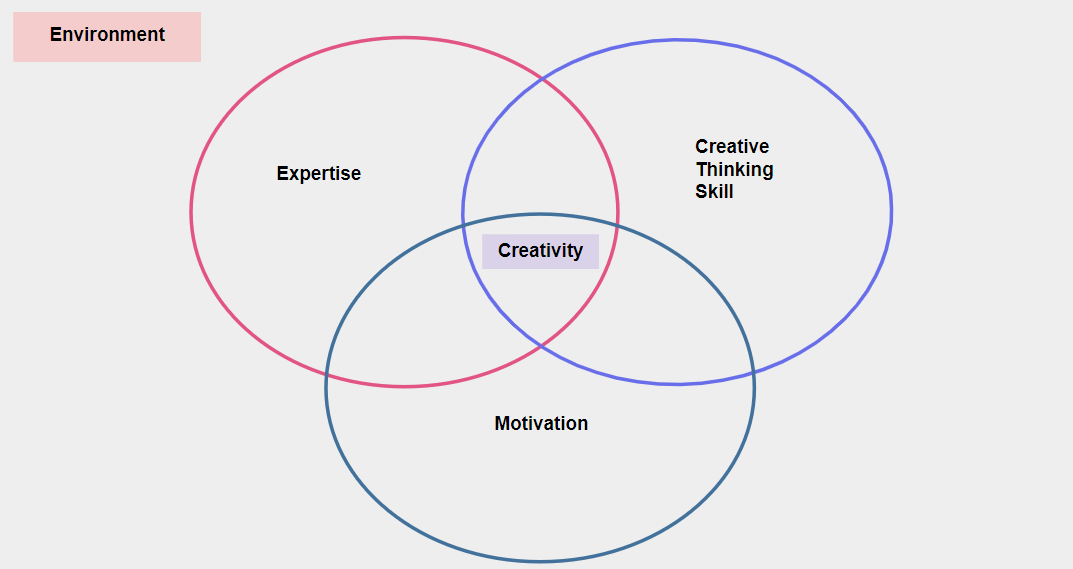
Imagination is not a synonym for creativity, as a final product is not always created. However, imaginative play can be a precursor to creativity (Mottweiler and Taylor 2014).

Renzulli’s Three-Ring Conception of Giftedness enrichment model (1977) describes the interaction between creative production, above average ability and task commitment in recognising high potential. Creative production in this model includes original material and products that are purposeful and have impact. Curiosity, openness to experience, mental playfulness and a willingness to take risks work together to solve problems (Renzulli 1982, 1983). In more recent research, Renzulli (2017) also suggests that creativity focuses on a product that is new and unique at a particular point in time.

Simonton (2012) frames creativity as ‘creativity = originality × appropriateness’. If there is zero originality or appropriateness, then there is no creativity. This highlights the importance of relevance and usefulness. In addition, Sternberg et al. (2002) argue that the product, idea or solution needs to be of high quality.

Amabile’s componential model of creativity (2012) explains that elements of creativity can be found in everyone. Creativity is at its peak when intrinsically motivated people have high domain expertise within an environment which supports creativity (Amabile 2012). This is illustrated in Figure 2**Error! Reference source not found.**.

Figure 2 – componential model of creativity



Dr Yong Zhao (Richardson et al. 2017) believes creativity is the key to understanding all human behaviour and learning. He defines creativity as:

* cognitive ability – the ability of the mind to combine existing things to come up with something novel
* courage – the emotional disposition to enact cognitive ability in the real world, including a willingness to confront challenge and take risks
* social value – the value to others beyond oneself.

While the elements of novelty and usefulness are central components to many definitions of creativity, the courage or desire to create sets Zhao’s definition apart from others. He believes that we are all born with the potential for creativity, and that it can either be nurtured or suppressed. This idea aligns with Gagné’s (2009) model of talent development in translating potential into performance and achievement.

### Creative and critical thinking

The [Alice Springs (Mparntwe) Education Declaration](https://www.education.gov.au/alice-springs-mparntwe-education-declaration/resources/alice-springs-mparntwe-education-declaration) (2019) acknowledges that creative and critical thinking skills support imagination, discovery, innovation, empathy and the development of creative solutions to complex problems.

Creative and critical thinking are distinct but related higher-order cognitive skills. Both require mental effort and involve similar thought processes and knowledge about a field or context. Being creative or a critical thinker in one field may not imply automatic transfer to another field (Vincent-Lancrin et al. 2019). Butler et al. (2012) acknowledge that creative and critical thinking are essential for problem solving and teachers should know how to develop both in the classroom.

It is essential that educators understand the relationship between creative and critical thinking to enhance students’ ability to problem solve (Baker et al. 2001). The [Australian Curriculum, Assessment and Reporting Authority (ACARA)](https://www.australiancurriculum.edu.au/f-10-curriculum/general-capabilities/critical-and-creative-thinking/) (n.d.) describes critical thinking as being at the core of most intellectual activity. Critical thinking is used in the creative domain to compare, evaluate, question, appraise, test and make judgements about possibilities that have social value. ACARA’s general capabilities framework assists with understanding the continuum of dispositions for the 4 elements organised for [critical and creative thinking](https://www.australiancurriculum.edu.au/f-10-curriculum/general-capabilities/critical-and-creative-thinking/). [Appendix A](#_Appendix_A_-) includes effective questioning that promotes creative and critical thinking.

The Australian Council for Educational Research’s (ACER) framework (Ramalingam et al. 2020) focuses on creative thinking rather than creativity because creative thinking:

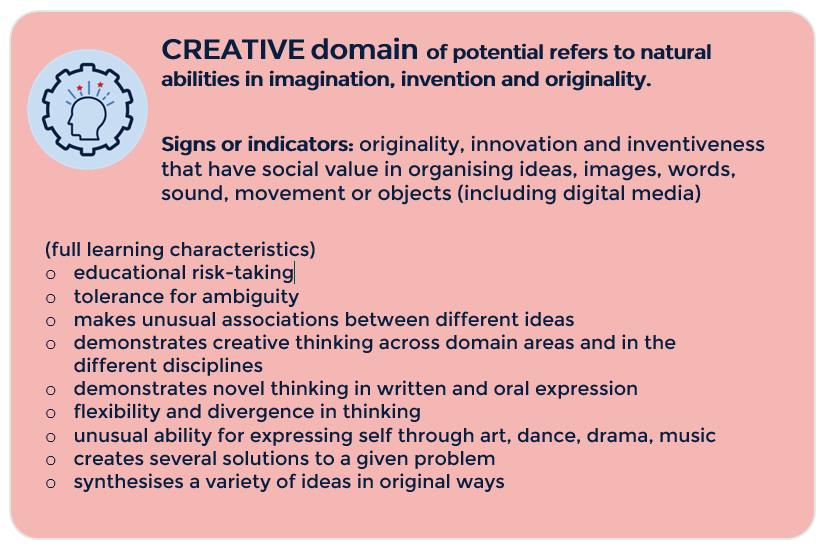
* underpins creative output
* strategies can be taught
* can be seen as the key element of a task, whereas creativity is a hybrid set of skills.

# Finding high potential in the creative domain

Knowing students well can assist teachers with recognising high potential in the creative domain. As with other domains of potential, it is the ease and speed of learning compared to age peers that distinguishes high potential and gifted students.

Actively looking for signs or indicators and characteristics summarised in Figure 3 can assist teachers to recognise creative high potential across all subject areas.

Figure 3 – creative domain definitions, signs and characteristics



This image has been adapted from the [Differentiated Model of Giftedness and Talent DMGT 2.0](https://education.nsw.gov.au/teaching-and-learning/high-potential-and-gifted-education/HPGE-policy-information#Gagn%C3%A9's3:~:text=Transcript-,Gagn%C3%A9%27s%20adapted%20model,-The%20policy%20draws) from the [NSW Department of Education](https://education.nsw.gov.au/) by Gagné.

Teachers can create opportunities to observe the relative ease and speed of learning in the creative domain within and across a range of disciplines. This includes:

* mathematics, science, agriculture, engineering and technologies
* creative arts: visual arts, dance, circus arts, music, drama and performance
* English and literary arts: film making, cartooning, law, writing, advertising, languages
* design and technology: jewellery making, furniture design, landscape and gardening, fashion and costume design, cooking, architecture
* social sciences: history, geography, business, entrepreneurship, philanthropy, psychology, social activism, citizenship and leadership
* sport, physical activity and games.

Creative and critical thinking are essential for problem solving in most professions (Wechsler et al. 2018; Seymour et al. 2003).

Some signs or indicators may be hidden or counter-productive (Betts and Neihart 2010). Disability, underachievement, and/or disadvantage may exclude or disguise indicators of high potential. Lack of opportunities for students to demonstrate indicators can also hinder recognition of high potential. Indicators should be understood as signposts to alert school leaders and teachers to characteristics of students with high potential. These indicators, signs and characteristics are not a checklist to be ticked off. To assist teachers with assessment and identification:

* [Appendix B](#_Appendix_B_–_1) lists examples demonstrating high potential in the creative domain across a range of disciplines
* [Appendix C](#_Appendix_C_–) contains student case studies.

Kaufman’s (2016) view that everybody has the same power to be creative, regardless of ethnicity, culture or gender can assist educators to actively look for high potential in the creative domain in all students.

Robinson (1999) believes finding creative potential is as important as literacy and should be treated with the same status. He describes some benefits in finding and developing creativity as:

* creating a range of multi-disciplinary opportunities
* allowing self-expression and imagination
* promoting thinking, problem solving and problem-finding
* promoting risk-taking and experimentation
* improving the ability to focus
* being a pre-requisite for innovation and new technologies
* promoting diversity for types of formative assessment
* promoting connection with other like-minded learners
* reducing stress and anxiety
* encouraging life-long learning and providing a sense of purpose
* leading to feelings of accomplishment and pride
* encouraging understanding of diversity, difference and uniqueness
* enabling economic and social change.

Csikszentmihalyi (1997) describes the benefit of studying the creative lives of exceptional people in enhancing everyday lives.



No single approach to finding high potential in the creative domain is ideal. As with any form of identification or assessment, multiple approaches should be used.

## Assessment

School leaders and teachers might consider the following questions when developing assessment in the creative domain:

* Is creativity assessed?
* Do creative assessments measure the desired outcome of what students are required to know, understand and do? (validity)
* Do assessments include the creative process or solely the end product?
* Do assessments track the development of creative ability over time?
* Is assessment of creativity built into daily classroom practice by teachers? How?
* Can common characteristics be identified in assessing creativity across the range of domain areas?
* How might creative and critical thinking be assessed in an ongoing manner across all curriculum or subject areas and disciplines?
* Is choice and variety offered in assessments across all subject areas? Examples include: portfolios, journals, prototypes, showcases, panels, questioning strategies, peer- and self-assessment?
* How are explicit criteria used to clarify creative quality? How is this communicated to students and teachers?
* Are criteria equitable, clear, purposeful and explicit so assessment is understood and can be accessed by all students? How do you know?
* How do you provide trusted, reliable and consistent assessments that are free from bias?
* Can assessment create opportunities for students to engage in real-world, authentic problem solving and finding?
* How is feedback provided to students throughout the assessment process?
* Is feedback timely, explicit and descriptive so students can use it to inform future learning goals?
* How can artificial intelligence (AI) be used responsibly to support the creative process? (NSW DoE 2018; NSW Government 2024)

**Formative assessment** is crucial in identifying ongoing needs of students to ensure continuation of talent development trajectories. It assists school leaders and teachers to recognise students at risk of disengagement. It allows the identification of barriers leading to development of strategies to re-engage students. It provides multiple opportunities for students to demonstrate high potential.

**Ongoing assessment** assists with development of aspirational benchmarks for future performance. Monitoring, evaluation and student self-assessment are essential in developing sustainable, effective procedures, programs and practices. Beghetto (2020a) refers to incubation. This involves stepping away from a problem for the short term to gain a fresh perspective. Ongoing assessment may play a role in determining the process of creative thinking during periods of incubation.

**Multiple criteria assessment instruments** can assist recognition of an individual student’s diverse characteristics in the creative domain. Examples include experimentation, flexibility, exploration, response to mistakes, technical skills, innovation, entrepreneurship, critical thinking, perfectionism, growth mindset, perseverance and resilience.

The following **processes** adapted from Jamieson-Proctor and Burnett (2004) may be useful in finding high potential in the creative domain (see Table 1 below).

Table 1 – processes adapted from Jamieson-Proctor and Burnett (2004)

|  |  |
| --- | --- |
| Process | Description |
| fluency | full of ideas, finds different ways of doing things |
| flexibility | can solve, change, adapt, modify, magnify, rearrange, reverse |
| originality | can create, invent, construct, substitute, combine, compose |
| elaboration | can enlarge, extend, exchange, replace, modify |
| intrinsic motivation | seeks knowledge independently, does a job well for its own sake |
| curiosity | tries to discover the unusual or find out more about a topic of interest |
| risk-taking | will challenge, criticise, judge, question, dispute, decide |
| imagination | will fantasise, play and pretend |
| engagement in complex tasks and challenges | can evaluate, generalise, abstract, reflect upon, move from general to specific |

### Expert panel assessment

The consensual assessment technique (CAT) developed by Amabile (1982) is one assessment option. It is based on the idea that the best measure of the creativity of a product for a common task is through combined assessment by experts in the field. Baer and McKool (2016) argue that this is the ‘gold standard’ in assessing creativity.

Reliability is generally high if 5 to 10 experts are on the assessment panel (Kaufman et al. 2008). If there are less than 5 experts, this may cause some problems with a lack of reliability. Although initially this process may seem time consuming at a school level, it could be implemented at faculty or grade level in a larger school or through a small school network. As experts focus on domain general traits, processes and abilities, **they do not all** need key learning area expertise. This allows for cross-faculty consultation and/or online consultation across schools. In this form of assessment, students are not deemed to be appropriate as experts (Kaufman et al. 2008).

Examples where expert panels are used include:

* artworks chosen for the [Young Archie](https://www.artgallery.nsw.gov.au/prizes/young-archie/) competition
* public speaking, writing, history or film competitions
* dance, vocal and music auditions
* STEM, robotics and engineering game challenger competitions
* portfolio submissions for larger projects and think tanks.

Note that expert panels for each discipline may assess creativity using different criteria. To maximise the validity and reliability of an assessment, the following steps may be considered:

* where possible, expert panel assessment should not occur at the start of the year
* assessors need to be objective and have a [collective understanding](https://education.nsw.gov.au/teaching-and-learning/curriculum/planning-programming-and-assessing-k-12/assessment-practices-consistent-teacher-judgement) (NSW DoE 2023) of the assessment process and checklist items (if used)
* multiple assessors in an expert panel should make independent assessments
* assessors may benefit from professional learning about creativity.

### Divergent thinking tests

Divergent thinking is the process of generating many different and unique ideas. The Torrance Test of Creative Thinking (TTCT) is a test of divergent thinking (Torrance 1966). The TTCT comprises a verbal test (creative thinking with words) and a figural test (creative thinking with pictures).

The use of video games to assess creativity, and of mobile phone apps for self-assessment of creativity is ongoing and continues to be refined (Kim and Shute 2015). This is also true for automatic computer scoring of divergent thinking tests (Acar and Runco 2015).

### Student self-assessment

Students can assess their own creativity. Self-assessment enables students to become effective, empowered self-assessors who can work towards developing a strong creative identity. Darrow et al. (2002) found that students can assess themselves quite accurately for summative purposes, particularly when the stakes are low.

Effective self-assessment needs to be explicitly taught. Students require a clear understanding of the standards expected to make effective judgments of their own creative output. Teachers can monitor the creative process through learning intentions, success criteria, co-developed goal-setting and by providing explicit feedback. Regular check-ins, particularly during open-ended creative tasks, can enhance a student’s ability to self-assess. Using exemplars, including showcasing creative work of experts may promote aspiration and deeper understanding of creative expectations.

Self-assessment is most successful when it becomes a regular and usual feature of learning. Creative thinking routines and models such as substitute, combine, adapt, modify, put to other purposes, eliminate, and rearrange or reverse (SCAMPER) and Williams (see [Appendix D](#_Appendix_D_-) and [Appendix I](#_Appendix_I_–_1)), when built into the teaching and learning cycle, can provide students with appropriate examples of self-assessment across and within a range of disciplines.

### Student group assessment

Learning in groups can be used to develop creative skills and products. Assessment of this learning can engage students in feedback and reflection through:

* [gallery walks](https://education.nsw.gov.au/teaching-and-learning/learning-remotely/teaching-at-home/expectations/contemporary-learning-and-teaching-from-home/learning-from-home--teaching-strategies/gallery-walk)
* showcases
* performances
* think tanks
* [learning logs](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/583)
* auditions
* [digital platforms](https://app.education.nsw.gov.au/digital-learning-selector/LearningTool/Browser?cache_id=5a92c).

Students can collaborate to co-develop strategies for constructive peer feedback and return to their own work to reflect on the creative process. To support effective collaboration with thinking creatively in a classroom, teachers can use principles adapted from Beghetto (2016) in [Appendix E](#_Appendix_E_-).

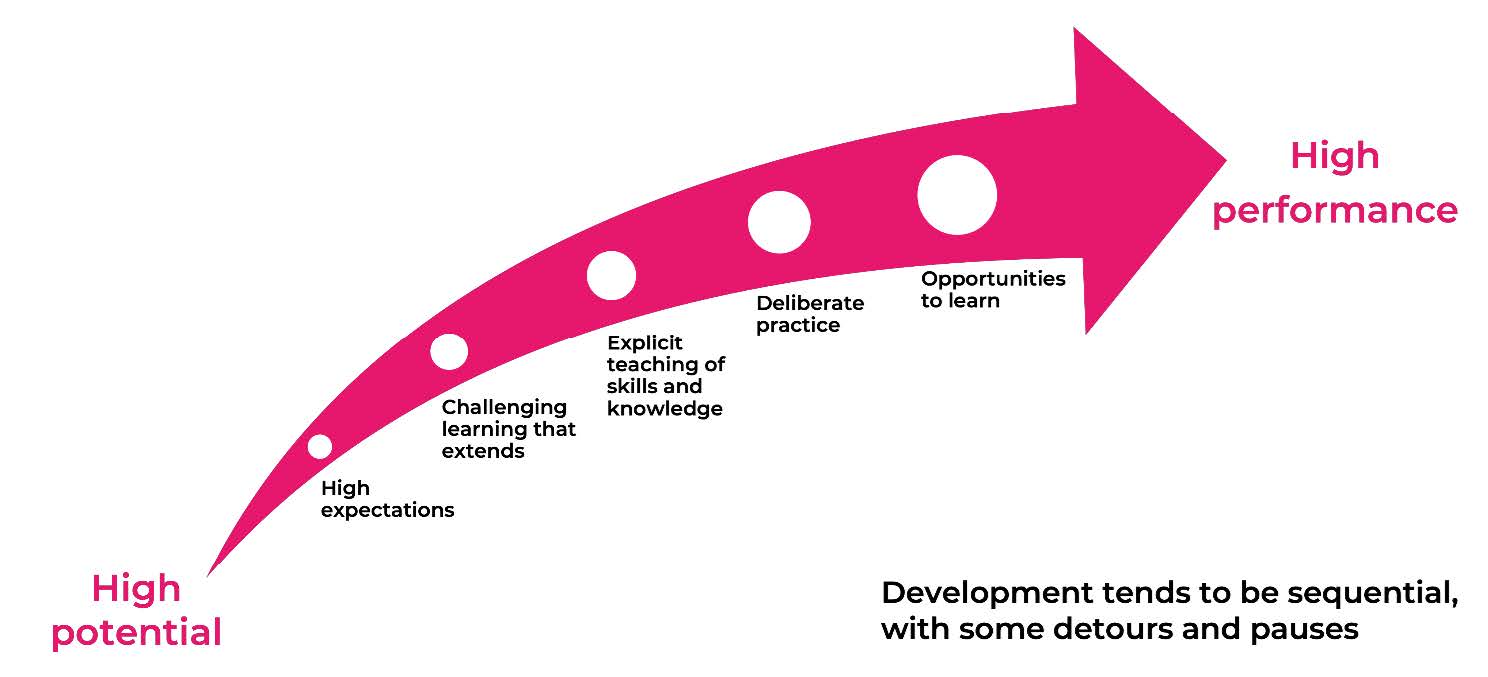
# Talent development

Talent development is the process by which a student’s potential is developed into high performance and achievement in a specific domain or field of endeavour ([High potential and gifted education (HPGE) Policy 2019](https://education.nsw.gov.au/policy-library/policies/pd-2004-0051)). High potential and gifted students require opportunities to engage in and develop creative talent across all domains of potential. Factors that enable talent development include:

* high expectations
* explicit teaching
* deliberate practice
* quality, differentiated opportunities that extend learning
* appropriate, purposeful grouping
* enrichment and extra-curricular programs
* advanced learning pathways, including acceleration.

Figure 4 illustrates the talent development of high potential into high performance through systematic processes.

Figure 4 – the talent development process



Torrence (1987) believes it is possible to teach children to think creatively in a variety of ways. Beghetto (2020b) acknowledges that although it is possible to support creativity, it is influenced by the individuals involved and the context in which they operate. Not all students may demonstrate high potential or giftedness in the creative domain. It should be remembered that it is the ease, speed and complexity of learning compared to age peers that sets these students apart. Amabile (2012) outlines factors that can promote or hinder creativity (see [Appendix F](#_Appendix_F_–)).

The cultivation of attitudes and mindsets such as openness and confidence with risk-taking while learning needs to be regular, explicit and embedded into programming and quality teaching.

The implementation of potentially creative ideas often includes setbacks, multiple iterations, and sometimes even the abandonment of highly original ideas in favour of ideas that may be less original, but actually work. (Beghetto 2020a:5)

Some groups of students are more likely to be underrepresented in talent development opportunities. To reduce excellence gaps, students who are experiencing disadvantage may require ongoing monitoring to identify high potential. Some general factors which are barriers to talent development in the creative domain include:

* lack of access to appropriate resources and provisions such as specialised equipment, enrichment, grouping or acceleration
* lack of opportunities in and beyond school which enable a high level of challenge
* opportunities missed due to barriers in communication with families
* diminished mindsets and wellbeing, including significant events or trauma
* geographical location
* social and/or cultural norms, or bias and/or absence of cultural safety
* low expectations
* influence of significant others (mentors, family, teachers, peers, role models)
* ‘forced-choice dilemma’ where students are torn between acceptance and the pursuit of high achievement (Jung et al. 2012).

Translating potential into high performance may require high challenge combined with high support, including targeted access to opportunities for some students who may:

* be at risk
* be from diverse cultural and linguistic backgrounds
* be from low socio-economic backgrounds
* live in regional, rural and remote areas
* have disability.

A whole-school approach to reducing barriers for identification of high potential and talent development can reduce structural inequities.



## Creative identity

Creative identity refers to the ‘crystallization of creative interests and aspiration into more stable beliefs about one’s broader identity and sense of self’ (Beghetto 2013; Beghetto and Dilley 2016). As an example, students may move from thinking they like writing short stories (interest) to wanting to be a short story writer (aspiration) towards the belief that they are a creative short story writer (identity).

Understanding the role that confidence and self-belief plays in creative identity (see [Appendix G](#_Appendix_G_–)) can impact effective talent development in the school learning environment. Students need to have the confidence and willingness to engage in creative thinking endeavours (Beghetto 2020a). Teachers play a vital role in fostering a positive creative identity so that creative potential is translated into creative achievement (Beghetto 2013).

Kaufman (2016) found that having a personality type of being open to experience correlates to creativity more than any other factor across all creative disciplines. Being aware of personality types can assist teachers to provide appropriate classroom and school environments that support creativity.



## Talent development in the creative domain and disability

Students with disability can demonstrate high potential in the creative domain. Finding and developing high potential in these students may require tailored resourcing and support. School leaders have a responsibility to ensure all students are supported to access quality learning opportunities that meet their needs and aspirations. This includes identifying and supporting professional learning needs of staff to support the inclusion of students with disability as outlined in the [Inclusive Education for students with disability policy](https://education.nsw.gov.au/policy-library/policies/pd-2005-0243). For further information about the principles of inclusive education, see the [Inclusive Education Statement for students with disability (PDF 246 KB)](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/disability-learning-and-support/our-disability-strategy/inclusive-education/Inclusive-Education-Statement.pdf).

High potential and gifted students with disability in the creative domain require programs that focus on talent development and strengths. For programs to be inclusive of a student’s high potential they should:

* provide appropriate and reasonable support and adjustments to allow access to the same opportunities as other students
* ensure similar opportunities for advanced learning and development are available as would be provided to other high potential and gifted students
* provide personalised adjustments based on assessed needs of the student in consultation with the student, their parents and carers, the school support team and external providers when required.

Teachers of high potential and gifted students with disability in the creative domain are required to:

* follow the procedures for disability support as outlined under relevant departmental policies and procedures
* collaborate with students, their families, and external providers such as medical professionals to share diagnostic and achievement information that help build learning plans which address talent development and adjustments for disability
* provide additional support addressing the complexity of both disability and high potential, including enhanced individual learning plans.

The [High Potential and Gifted Education](https://education.nsw.gov.au/teaching-and-learning/high-potential-and-gifted-education) webpage includes illustrations of practice and related professional learning questions to support schools. [Tilly’s story](https://education.nsw.gov.au/teaching-and-learning/high-potential-and-gifted-education/supporting-educators/illustrations-of-practice/tilly-s-film) outlines the talent development of a student with disability who demonstrates high potential in music. Tilly’s high potential in the creative domain was assisted through a range of programs and practices. [Tate’s story](https://education.nsw.gov.au/teaching-and-learning/high-potential-and-gifted-education/supporting-educators/illustrations-of-practice/tate-written-case-study) is a case study that describes a 5-year-old student with a verbal language disorder. Tate demonstrates exceptional spatial and writing skills, problem solving and drawing for his age.

The [Arts Unit](https://artsunit.nsw.edu.au/) provides opportunities for high potential and gifted students with disability in the creative domain to participate in [All Ability Arts](https://artsunit.nsw.edu.au/program/all-ability-arts) and [Connections Showcase](https://artsunit.nsw.edu.au/program/connections-showcase). [Celebrating all abilities through arts](https://education.nsw.gov.au/news/latest-news/celebrating-all-abilities-through-arts-showcase) online showcase provides opportunities for high potential and gifted students with disability to share their creativity.

School leaders can use these resources to promote discussion and understanding of their own students with disability who may show signs of high potential in the creative domain.

## Practical strategies for schools

Whole-school practices support smooth transition from high potential to high performance. Schools should proactively plan to embed whole-school practices and programs in the creative domain. The [HPGE Evaluation and Planning Tool](https://education.nsw.gov.au/teaching-and-learning/high-potential-and-gifted-education/supporting-educators/evaluate#:~:text=progress%20and%20achievement.-,High%20Potential%20and%20Gifted%20Education%20Policy%20Evaluation%20and%20Planning%20Tool,-The%20High%20Potential) provides practical strategies to assist schools with whole-school planning (see [Appendix H](#_Appendix_H_–)).

Schools are responsible for providing access to professional learning, including knowledge of identification strategies, and teaching and learning strategies related to the creative domain. Teachers can be provided with:

* training in identifying and developing high potential and giftedness
* opportunities to further develop their knowledge and expertise
* relevant knowledge about strategies to support talent development
* organised time to support high potential and gifted students and recognition of the importance of talent development within school settings
* **professional learning** to identify and support psychological issues such as anxiety, perfectionism or depression.

‘Students already have the capacity to think creatively, so the better question is how can we provide opportunities for young people to become more aware, confident and intentional in using their ability to think creatively?’ (Beghetto 2020a p 20)

**Effective talent development** to provide an appropriate level of challenge in the creative domain might consider:

* **high expectations** from school leaders, teachers, peers and students
* integrated curriculum opportunities
* **explicit teaching to maximise learning of new creative skills at any level (Martin 2016)**
* **deliberate practice through a broad range of real-world contexts**
* **extension of skills and knowledge within the classroom, across school and in the broader community**
* **individual goal setting, peer- and self- assessment**
* **self-reflection and feedback to develop a growth mindset**
* **social-emotional development that explicitly assists students to cope with stresses, perfectionism, family or group pressure**
* **measurement of evidence of impact to inform next steps**
* equitable or consistent acknowledgement of the creative domain and other domains of potential: intellectual, social-emotional and physical
* whether creative and critical thinking processes are valued
* access to mentors, role models, alumni, leadership roles, master classes
* opportunities to observe other like-minded students with higher ability
* flexible, purposeful grouping with others of similar capabilities, including acceleration
* effective transitions
* making connections with local projects that target student passion areas
* career choices, internships, and pathways to plan and transition towards career aspirations (Hébert 2011)
* vocational education and training (VET) in-school or in partnership with other schools
* student-led creative programs and student voice at staff, school and community meetings
* application of the [Early Years Learning Framework (EYLF) V2.0 (PDF 24.9 MB)](https://www.acecqa.gov.au/sites/default/files/2023-01/EYLF-2022-V2.0.pdf) which emphasises the importance of creative expression, divergent thinking and play-based learning
* networking with other schools for enrichment opportunities and expert panels
* nominations for talent development programs and opportunities
* viewing and discussing [illustrations of practice](https://education.nsw.gov.au/teaching-and-learning/high-potential-and-gifted-education/supporting-educators/illustrations-of-practice/tate-written-case-study) about the creative domain.

See [Appendix I](#_Appendix_I_–_1) and [Appendix N](#_Appendix_N_–) for comprehensive resources and strategies to assist in developing creative talent.

Families, educators, peers and mentors, events and programs can play a key role in supporting talent development for these students.

## Practical strategies for teachers

The cultivation of attitudes and mindsets, such as openness and risk-taking with learning, as part of purposeful programming and quality teaching can assist in fostering creative talent development. The importance of a safe, risk-free learning environment is essential for all students; however, it is crucial when fostering creativity.

Simply giving students permission to be creative, whether it be in given instructions or in providing a safe and nurturing environment, will lead to more creativity (Kaufman 2016). Simple strategies for teachers include:

* encouraging risk-taking in creative thought
* affirming feedback, regardless of whether the correct solution is achieved
* providing examples of the talent development journey of creative people
* understanding the steps in the trajectory of a creative idea (Munro 2019 in [Appendix I](#_Appendix_I_–_1))
* providing opportunities that require advanced creative thought
* inviting students to tackle challenging problems and issues that matter to them
* establishing a learning environment that encourages the generation and exploration of multiple perspectives and ideas.

Sowden et al. (2015) found that training students in improvisation techniques can increase their creativity. Improvisation is an opportunity for an audience to see the creative process in action and can occur in settings such as comedy, drama and jazz ensembles (Sawyer 2011).

Table 2 summarises additional talent development support in the appendices.

Table 2 – additional talent development support

|  |  |
| --- | --- |
| Additional support | Content |
| Appendices [D](#_Appendix_D_-) and [I](#_Appendix_I_–_1) | Classroom strategies and resources for promoting creativity |
| Appendices [A](#_Appendix_A_-), [E](#_Appendix_E_-), [H](#_Appendix_H_–), [L](#_Appendix_L_–), [M](#_Appendix_M_-), [N](#_Appendix_N_–) | Further support with planning, programming and implementation of curriculum |
| [Appendix J](#_Appendix_J_–) | Practical application of creativity research in early learning, primary and secondary settings |
| [Appendix K](#_Appendix_K_–) | Teaching tips to promote creativity |

### Legacy projects

Teachers may consider legacy projects as a practical way to develop creativity. Legacy projects are designed by students for students. Students are asked to investigate a local problem in their school, community or beyond where they want to have a positive impact. Legacy projects benefit students by providing a structured, supportive opportunity for students to think creatively while developing solutions to complex problems. Students can use legacy projects to engage in multidisciplinary approaches across disciplines. Projects are structured using the following questions:

* What is the problem?
* Why does it matter?
* What are we going to do about it?
* What lasting impact will our solution have?

The project benefits students by providing opportunities to develop and experience:

* how to evaluate the costs and advantages of creative risk-taking
* setbacks, failure and success
* reflection on actions and learning
* building of creative confidence.

Participation in legacy projects can show students they have the capacity to put ideas into practice and have a positive impact on the lives of others (Beghetto 2018). See [Appendix L](#_Appendix_L_–) for further information.

### The Differentiation Adjustment Tool

The [Differentiation Adjustment Tool](https://education.nsw.gov.au/teaching-and-learning/high-potential-and-gifted-education/supporting-educators/implement/differentiation-adjustment-strategies) (DAT) refers to creative and critical thinking, including strategies for:

* creating original designs or responses
* encouraging risk-taking and experimentation
* exploring ideas and alternative options
* divergent and convergent thinking.

See [Appendix M](#_Appendix_M_-) for further information on the DAT.

# Opportunities beyond the school

Schools play a crucial role in informing students, parents and carers about opportunities to foster talent development beyond the school.

High challenge opportunities to learn and participate with other like-minded peers in the creative domain include:

* talent identification programs and auditions
* holiday workshops, camps or weekend programs
* mentoring by experts and role models
* opportunities to enter competitions
* community events, festivals and authentic learning opportunities
* university programs
* school network opportunities.

Facilitating flexibility, shared enrolment or partial attendance can support opportunities when the school is unable to offer the appropriate level of talent development. Partnerships with organisations or universities can provide additional expertise and role modelling for students and teachers. Schools can utilise past students as coaches, mentors or inspirational speakers.

Schools can liaise with local drama, STEM or dance clubs, businesses and associations to request information or demonstration sessions. For further opportunities and resources beyond schools, see [Appendix N](#_Appendix_N_–).

## Conclusion

School leaders and teachers play a crucial role in assessing, identifying needs and supporting talent development in the creative domain. High potential students can be supported through promotion of creative identities, self-belief, interests and aspiration.

Creativity can be found in a range of curriculum areas and disciplines. Purposeful planning that considers student diversity, equity, individual competencies (person), learning environments (place), processes and products will assist talent development in the creative domain.

‘History tells us it has been the creative and productive people of the world, the producers rather than consumers of knowledge … who have become recognised as “truly gifted” individuals. History does not remember persons who merely scored well on IQ tests or those who learned their lessons well.’ (Renzulli et al., 2018, p 4)

# Appendices

## Appendix A – questioning to develop creative and critical thinking skills

‘Telling or asking closed questions saves people from having to think. Asking open questions causes them to think for themselves’ (Whitmore 2009).

Thinking that is productive, purposeful and intentional is at the centre of effective learning. Creative and critical thinking involves students engaging broadly and deeply in learning. High potential and gifted students require explicit teaching, modelling, structure and opportunities to develop thinking skills. Using effective questions and question stems can assist teachers to optimise creative and critical thinking in students.

### Questions and question stems with purpose

Table 3 – inquiring – identifying, exploring and organising information and ideas

|  |  |
| --- | --- |
| Purpose | Questions and question stems |
| For significance: | * What is the most important point to consider? * What questions does this raise? * In what way do you think … will help us? * Can you tell me why …? * What are the underlying principles …? |
| For clarity: | * What is an example of that? * How can you explain that in different words? * What exactly …? * How exactly …? * Can you clarify the causes and effects of …? |
| For accuracy: | * How can we test if … is accurate …? * How did you figure out that …? * What is the meaning of …? * How exactly …? * How can we challenge the reliability of that notion? |

Table 4 – generating ideas, possibilities and actions

|  |  |
| --- | --- |
| Purpose | Questions and question stems |
| For creativity: | * What if …? * What are all the different possibilities? * Can you think of other ways we can use the information about …? * Can you think of other examples where this has happened? * What unique product or design can be created? |
| For flexibility: | * What if …? * What could be another point of view? * What are some alternative options? * Did you find any other …? * How has that changed …? |

Table 5 – reflecting on thinking and processes

|  |  |
| --- | --- |
| Purpose | Questions and question stems |
| For fairness: | * What are we assuming …? * What are the reasons for and against …? * What problems might … cause? * How can we apply the process of ’reverse thinking’ to …? |
| For reflection: | * What will help us to move forward? * How do you feel about …? * What does that mean for us? * What would happen if you …? |

Table 6 – analysing, synthesising and evaluating reasoning and procedures

|  |  |
| --- | --- |
| Purpose | Questions and question stems |
| For depth: | * What are the implications of …? * How has our understanding developed …? * How has that changed? * Is there any other way you could interpret that? * How can we unpack that further? |
| For reasoning: | * Why do you think that …? * Does this follow …? * How do your reasons support your conclusion? * What are the reasons for and against? * If … then …? |

Table 7 – general strategies to enhance questions and question stems

|  |  |
| --- | --- |
| Purpose | Questions and question stems |
| Teachers can: | * Ask fewer, effective questions * Wait at least 3 seconds after asking a question * Wait at least 3 seconds after an answer * Model thinking time * Use enforced thinking time (no hands up and wait 10 seconds) * Be flexible by accommodating the unusual |
| Students can: | * Value contributions from others * Wait their turn before speaking * Criticise ideas not people * Respond by building on others’ ideas |

Adapted from ACARA (Australian Curriculum, Assessment and Reporting Authority) (n.d.).

## Appendix B – examples of high potential in the creative domain

|  |  |  |  |
| --- | --- | --- | --- |
| Example of high potential in the creative domain | Why? | Not an example of high potential | Why not? |
| When asked what you want to be when you grow up, a student responds with: ‘I want to create a sustainable food source solution for disadvantaged communities that have experienced natural disasters such as flood or bushfires.’ | This example has social, scientific and economic value and if it eventuates, will be considered high quality. The response is deemed to be beyond the student’s peer group in sophistication and complexity and reflects high ability and originality. | When asked what you want to be when you grow up, a student responds:  ‘I want to be a tuna sandwich.’ | This example initially appears to be playful, imaginative and humorous. To be accepting of all responses, teachers may need to dig deeper to evaluate simplistic imaginative responses. By providing further opportunities to elaborate or extend thinking, teachers can ascertain high potential over time. |
| A student composes a technically advanced original song. The song is used to encourage thinking about ageism and uses unusual musical features in its structure. | The composition is highly advanced relative to age peers and tackles an original and sophisticated theme. The advanced structure utilises elements from a range of genres in a unique way. | A student mimics the song ‘Happy birthday’ and sings it in a funny voice. | Although playful and humorous, this tune is not original and would be an expected response from a similar-aged peer. It is not advanced conceptually or through meeting the creative brief. |
| A student produces an abstract artwork in response to a lesson on celebrations. | The artwork is conceptually advanced compared to those of age peers. It combines diverse techniques, colours and symbols. The artwork initiates an emotional response in the artist and audience. | A student copies an artwork of an established artist. | The copied artwork is not original in concept or technique and is not beyond what would be expected from age peers. It may be a semi or highly accurate copy but does not demonstrate originality that has social value. |
| A student creates a landscape design for the school garden which combines ideas from staff and students. The garden includes suitable aspect, space and scale, educational QR coded checkpoints, unusual plant choice and is underpinned by a specific conceptual idea. It harnesses all 5 senses and considers elements for students with specific disabilities. | This design is high quality, and is original in concept, skill and technique. It synthesises many design elements and makes evaluative judgements about the social value to the school. It incorporates cross-discipline creativity in mathematics, science, psychology, education, technology and innovation. | A student downloads a garden design from the internet and uses plant cuttings taken from the current garden to fill the space. | This design has no originality and did not take creative risks. Although it utilises existing plants, it does not demonstrate advanced conceptual design or unusual ideas that will give value to the school. |

Adapted from Kaufman (2016).

## Appendix C – student case studies

|  |  |  |  |
| --- | --- | --- | --- |
| Student | Characterised by | Considerations | May benefit from |
| Sam – a quiet, isolated, high performing Year 5 student | Sam is introverted and happy to remain isolated. Due to prodigious success in most school endeavours, staff believe that Sam will continue to succeed. Staff think Sam talks to teachers as he is not able to make friends easily. | Sam may be waiting for the opportunity to creatively emerge and share thinking without penalty or quick judgement.  He may 'get along' with students but is yet to find a like-minded peer.  Highly creative students may retreat if they believe others think they are weird.  They may develop strong creative relationships with older students, teachers or adults who are prepared to listen, understand or encourage creativity. | * Connection with an older role model or peer who shares similar creative ability or interest * Choice and flexibility to demonstrate creativity * Affirmation and praise for creativity * Teachers with training in how to develop talent in the creative domain * A strengths-based approach to talent development * Interpersonal skill awareness, including mindfulness * Explicit teaching of mindfulness and creative identity |
| River – a noisy, disruptive and often seemingly irreverent Year 9 student | Extroverted with attention-deficit hyperactivity disorder. River receives comments such as ‘unfocused’, ‘disruptive’, ‘calls out’, ‘spirited’, ‘will not follow instructions’ and ‘is not reaching true potential’. Despite this, River still passes most subjects by completing little classwork or homework. | River may be trying to find like minds among peers and teachers. This divergent behaviour may be regarded as counterproductive.  River considers the behaviour amusing, while others consider it rude or inappropriate.  River requires an elevated level of stimulation and/or becomes over-stimulated by distractions.  Due to a multitude of different ideas and thoughts, River may appear erratic and disorganised.  Tasks may no longer hold River’s attention as they have already been processed, or interest is lost due to a more interesting topic or distraction. | * Acknowledgement of creative talent and praise for creativity to build a strong sense of creative identity * Flexible approaches to demonstrate creativity * A strengths-based approach to talent development * Support with organisation * Direct and clear communication outlined in a co-negotiated learning plan * Connection with an older role model or peer who shares similar creative ability or interest * Strategies to channel distractions and energy |
| Jiemba is 5 years old with exceptional spatial and problem-solving skills. This includes advanced writing and drawing. Jiemba is a popular student. | Jiemba relates well to all peers and adults and is socially adept at understanding and communicating all perspectives.  Jiemba’s reports indicate success and often highlight advanced creative and emotional abilities.  Recently, Jiemba has begun to show signs of boredom with creative activities. | Jiemba is seemingly doing very well and seems highly regarded by both adults and age peers.  As a young, high potential student, success in the creative domain seems inevitable.  However, Jiemba’s frustration could be a result of fine motor skills not being able to match the advanced level of creative thinking in a product or a lack of challenge. | * Opportunities for sharing and communicating creative thinking with others * Role models and mentors to support advanced creative pursuits * Access to a range of creative problems within and outside of Jiemba’s usual interest to challenge and ignite creativity * Support with taking risks, experimentation, perfectionism, perseverance and positive mindsets * Opportunities for authentic tasks and audiences * Co-establishment of learning goals that develop strengths but also support areas for development * Ongoing monitoring to provide challenge and explicit teaching at Jiemba’s level of ability |
| Sage is highly sociable with some students and fully disengaged from others. Sage is often dismissive of staff and rules. | Seen as a troublemaker, rebel and unruly, Sage intentionally breaks rules.  Sage is considered to be a negative influence. Sage may indulge in high-risk or illegal behaviours. | Sage’s counterproductive behaviour may be due to attempts to demonstrate creativity.  With a chance to have divergent thought recognised, Sage may have an opportunity to develop and contribute creative talent. This may result in more productive behaviour.  Sage may be searching for recognition of creative ability and identity and could benefit from support. | * Connection with a positive role model who shares similar interest or passion * A strengths-based approach to talent development * Choice and flexibility to demonstrate creativity in a range of ways * Affirmation and praise for originality * Explicit teaching to support positive management of risk-taking behaviours * Building a strong sense of creative identity and self-efficacy |

Adapted from Betts and Neihart (1988), Gross (2003) Guildford (1973).

## Appendix D – routines and models that foster creativity

This section provides some examples of thinking models and routines to foster creativity that can be adapted for P–12 students.

### Bloom’s Taxonomy

The [Learning Activities](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Browser?cache_id=ae897) in the [Digital Learning Selector](https://app.education.nsw.gov.au/digital-learning-selector/) (DLS) are curated according to Bloom’s Taxonomy.

### Fluency, flexibility, originality, elaboration (FFOE)

**Fluency** is the action of coming up with as many ideas as possible. Encourage lots of ideas, solutions, possibilities and consequences through activities such as listing:

* as many things as you can for a criterion such as: red, small, comes in pairs, inspires, has more than one use and so on
* all the things that involve a concept such as truth, love, justice, conflict
* possible uses for a given, everyday object, such as a paperclip
* solutions for a problem and ways a solution can be represented.

**Flexibility** is the ability to adapt to new situations and try various ways to approach and solve problems. It means not accepting the first and most obvious solution, approaching an idea from different perspectives and adapting process and product. Flexibility can be developed through questions such as:

* What items could be bought at a supermarket that could be used to make a dress?
* Can you create or use a metaphor, simile or analogy to describe …?
* How many different ways can you categorise these items?
* What is another way to solve this problem?
* What is another way to look at …?
* What is another way to use …?
* How else can you …?
* What if …?

**Originality** is the development of unique, unusual and novel ideas. Being original does not always mean coming up with something totally new. It can also mean taking an old idea or product and giving it a twist so that the outcome is novel. To emphasise originality, ask students to:

* create a new or unusual use for …
* think of a better way to …
* create a new ending for a book or film
* design a device to solve a problem.

**Elaboration** is the process of providing extensive and extended detail. It requires expansion, embellishment and extension of ideas. Creativity involves refinement and continual improvement of ideas. Inspire students to expand, enhance and increase complexity of ideas through activities such as:

* choosing a word or sentence from a text and elaborating on it by creating a story, picture, poem or song
* telling what happened before a given story begins
* adding 3 rules to a game and explaining how this improves it
* discussing creative analogies such as which month is heaviest and which hour of the day is the sweetest.

Adapted from State of New South Wales (Department of Education) (2013).

### Maker model

|  |  |  |
| --- | --- | --- |
|  | Maker Model Modifications |  |
| **Content modifications** |  |  |
| Abstraction | Going beyond the facts, examining underlying ideas, symbolism and meanings of the content. | What makes a piece of music a ‘classic’? Find current music that has the same characteristics. |
| Complexity | Posing challenging questions or situations that force the learner to deal with content intricacies, greater breadth or depth. | In what ways are the relationships between Romeo and Juliet and between Othello and Desdemona similar? |
| Variety | Sampling different types of related content, often from other disciplines or subject areas. Exposure to new ideas or content. | Think of instances in visual arts or songwriting when a clash between 2 people or groups results in a negative outcome and a positive outcome. |
| Study of people | Relating content to people, the human situation and human problems. | Compare very early and late works of the same musical composer. How did his or her musical style change? In your opinion, did it become more or less creative and how? |
| Methods of inquiry | Relating content to the methods and procedures used by people in a field or subject area. | How does the Academy of Motion Pictures Arts and Sciences choose Oscar winners each year? In your opinion, does this process promote or hinder creativity in film production? |
| **Process modifications** |  |  |
| Higher-order thinking skills | Utilising higher-level thinking skills (analysis, synthesis and evaluation) for regular content processing. | Choose a creative discipline, for example, dance or sketching, and explain how performances and products have changed over the last 50 years. |
| Open-ended processing | Utilising divergent thinking skills (such as paradox, analogy, tolerance for ambiguity, intuitive expression) for regular content processing. | When can freedom of choice limit you? |
| Discovery | Requiring students to progress through a series of steps of inquiry to draw conclusions, answers and generalisations. | Groups of students investigate bullying in school from a ‘student voice’ perspective, developing and testing initiatives to reduce bullying. |
| Freedom of choice | Providing opportunities for self-directed, independent study. | Study a composer or playwright of your own choice, considering how life experiences promoted or hindered their creativity. |
| Group interactions | Enabling group problem solving. | Groups of students survey different playground areas, brainstorm ways they could be improved and then select one likely to succeed and act. |
| **Product modifications** |  |  |
| Real-world problems | Learners investigate the kinds of questions and problems investigated by professionals; ‘real-life’ problems. | How could major world powers combine to solve the problem of hunger in Third World countries? Why don’t they? |
| Real audiences | Student products are developed for the expected evaluation by professionals or experts in that field or discipline. | Survey student eating habits. Based on results, evaluate any changes needed for the school canteen. Create an advertising campaign to encourage students to try new, healthier foods. Ask a local health professional for feedback. |
| Transformations | Students are encouraged to suggest practical uses for what has been learned. Uses may be in non-traditional media. | Develop a mentoring program in which older students teach younger students how and why dance or visual arts are important. |
|  |  |  |

Adapted from State of New South Wales (Department of Education) (2013).

### SCAMPER model

|  |  |  |
| --- | --- | --- |
| SCAMPER | Brainstorming prompts | Stimulus words |
| **S**ubstitute | * Who or what else could be used instead? * Is there another material or process? * Is there another perspective? * Could you use another procedure, plan or goal? | alternate, exchange, fill-in, rename, replace, reposition, change, stand in for, swap, switch, take the place of, proxy, use instead of |
| **C**ombine | * Could you blend or create an assortment or ensemble? * Could you combine materials or ingredients? * Can you combine concepts or ideas? | merge, blend, bring together, co-mingle, conjoin, unite, join, coalesce, mix, associate, package, restructure |
| **A**dapt | * What other idea does this suggest? * Does something or someone from the present or the past offer a parallel you could adapt? * What have professionals used? * Can you adapt something from nature? | change, alter, adjust, vary, amend, bend, fit, conform, copy, emulate, incorporate, transform |
| **M**odify | * How could this be altered for the better? Could you improve it by changing the name colour, motion, sound, order, form or shape? * Can you alter your plan or processes? * How would a stranger or non-expert view this problem? * Could you make it smaller, lower, lighter, slower, bigger, faster, stronger, higher, longer, thicker? * Would extra features or ingredients make it more convenient, reliable or available to a wider audience? * Can you split or streamline the product or omit something? | adapt, adjust, alter, change, grow, amend, vary, transform, mutate, curb, control, temper, modulate, exploit, capitalise on, get the most out of, take advantage of, enlarge, increase, expand, amplify, make bigger, raise, enlarge, lengthen, heighten, boost, augment, extend, reduce, diminish, lessen, curtail, decrease, shorten, stretch out, lower, moderate, over-emphasise, overstress, minimise, modulate, reduce, restrict, under-emphasise |
| **P**ut to other purposes | * What else can it be used for? * Are there other functions or purposes if modified? * What is the most unconventional, unusual new use you can think of? | employ, utilise, exercise, apply, exploit, draw on, handle, treat, manipulate, manage, function, purpose |
| **E**liminate | * What could be left out? * Can any negatives or rules be eliminated? * What parts are not required? * What would a process flow chart reveal? | remove, eradicate, abolish, remove, reduce, purge, exclude, expel, lessen, limit, liquidate, pass over or pass on, reject |
| **R**everse  Rearrange | * Can you reverse roles? * Transpose positive and negative? * Can you turn it backwards, upside down or inside out? * Can the design or components be interchanged? * Can you reverse or change the sequence, pace, schedule, direction or viewpoint? | overturn, turn around, undo, annul, invalidate, repeal, quash, swap, transpose, switch, invert, change, contrary, converse, inverse, antithesis, modify, adjust, amend, correct, improve, rework, reorganise, reschedule, restructure, move around undo, withdraw, transpose, move backwards, forwards or around |

Adapted from State of New South Wales (Department of Education) (2013).

### Williams model

|  |  |  |
| --- | --- | --- |
| Strategy | Explanation | Learning example |
| Paradox | Statements or observations that appear self-contradictory but which may contain truth. | You can make an artwork by destroying it. For example, Banksy’s ‘Love is in the Bin’. |
| Attribute listing | Identification of properties or qualities by examining them in a new light. | Identify the individual characteristics of satire and how they might be used creatively. |
| Analogy | Comparisons of very unlike things, forced comparisons. | * How is an orange like feelings? * How is a lever like a friend? |
| Discrepancy | Focus on gaps and missing links in knowledge. Students challenge themselves to discuss or research what is not known or understood. | What might have happened if Aboriginal and Torres Strait Islander peoples had engaged in a greater level of trade with Asia prior to European settlement? |
| Provocative question | An inquiry that stimulates exploration and curiosity. | Are there any parts of the world we should not explore? Why? |
| Examples of change | Show dynamics of how something has changed or make modifications, alterations or substitutions. | * How did the invention of the motion picture (films) change our lives? * Choose a character from a book and explain how and why your attitude towards them has changed. |
| Examples of habit | Examine examples that demonstrate rigidity and inflexibility. | * Describe and comment on stereotypical portrayals of mathematicians or scientists in novels or films. * Identify a habit you have always had and evaluate whether it promotes or hampers your creativity. |
| Organised random search | Use a given situation or body of knowledge (often with a historical base) to determine possible fresh courses of action. | Find historical photos of your local area and compare them to recent images. From the perspective of an artist, discuss whether you would have made the same changes or made different choices. |
| Skills of search | Research a topic, applying trial and error processes to evaluate | How do we judge success? Design a survey to define who is successful and trial it on at least 10 classmates. What is interesting about your data? |
| Tolerance for ambiguity | Pose ‘What if …?’ or ‘What would happen if ...?’ open-ended scenarios that challenge thinking and problem solving | Could there ever be a positive aspect to losing something you love dearly? |
| Intuitive expression | Being sensitive to one’s own and other senses which can be channelled through role-play and guided imagery. | What makes a memory? Roald Dahl once said that people do not remember weeks, days, hours or even minutes – but rather only remember moments. Is this true? How do you store memories? How is this different to a friend’s experience of memories? |
| Adjustment to development | Learn from mistakes. Show how failure, mistakes and accidents have led to the discovery of worthwhile things. | * Was there anything you would do differently if you were given the opportunity to carry out your success survey again? * Study the various theories of how the pyramids were engineered and look for evidence that initial errors led to ultimate success. |
| Study creative development | Analyse the traits of creative people, creative processes or the creative product produced by a student. | Research the life of Leonardo da Vinci, with a specific focus on the role as an inventor. What processes did he undertake to design, test and record his inventions? |
| Evaluate situations | Extrapolate significant information from ideas, actions and answers in terms of implications and consequences. | How have plants altered the course of history? For example, spices, coffee, tulip bulbs or potatoes. |
| Creative reading skills | Generate novel ideas by reading, rather than just reading for meaning. | Read about the art and lives of female Impressionists. What about this time enabled some of them to achieve recognition compared to other eras? |
| Creative listening skills | Generate novel ideas by using listening skills to make connections, identify inference and ideas. | Interview an expert to discover when and how they first became interested in their field. |
| Creative writing skills | Generate novel ideas in writing. | Use a combination of 2 or more poetry tools: simile, metaphor, onomatopoeia, alliteration, assonance, rhyme, rhythm, personification, senses, imagery. Create a message about a current media event. |
| Visualisation | Express ideas in three-dimensional, or non-traditional visual forms. | Film a dance with a group that illustrates an emotion.  Create a short film about the life of a prominent Australian involved with creating art, for example, filmmaker, dancer, sculptor.  Make a 3D model of your ideal classroom using only green items. |

Adapted from State of New South Wales (Department of Education) (2013).

## Appendix E – guiding creative thought in the classroom

This guide provides explicit examples that can be modified and used to guide students to evaluate possibilities during the creative process.

|  |  |  |
| --- | --- | --- |
| Principle | Examples of what to say | Examples of what not to say |
| Focus feedback on ideas, not people. | I don’t understand how these fit? | You must be crazy! |
| Each possibility is considered, no matter how unique. | Let’s consider all ideas at this stage. | * That’s unachievable! * That’s just silly … |
| Explore first steps and potential setbacks to ensure successful implementation of ideas. | * Starting here doesn’t mean you’ll end up right where you want to be, it is important to just start exploring. * Don’t see these as setbacks, they’re just steps to get you closer to the final solution. | * Don’t start until you know exactly where you want to end up. * You made another mistake, maybe you should just give up. |
| Preface feedback with ‘What if …?’ to provide suggestions that lead to new ways of thinking. | * What if …? * What might happen next? * Why do you think that? | That’s a terrible idea that will never work. |
| Make feedback specific, deep and useful. | * Your idea is quite original, leads to a useful solution to the problem, will save time and money and considers the context. What about …? * How might you make it more viable for …? * What if you added …? * What if you took away or substituted …? * Could you use existing …? * What might you need to …? | That’s really creative. Well done! |
| Make seemingly impractical ideas more useful and common ideas more unique. | * How might you make this more practical for the context of the problem? * How might you think about this ordinary idea to make it more unique? | Impossible, it’s never been done before! |
| Identify potential barriers to success and provide ideas to address those barriers. | * How might you overcome some of these barriers? * What would it take to remove those barriers, so this is practicable and fit for purpose? | There are too many hurdles so you will need to think of something else. |
| Identify first steps that can be taken to put ideas into action. | * Firstly, let’s … * Secondly, we can … * Thirdly, we should … * So, in summary, our action plan includes … | Let’s wait and just see what happens. |
| Creative thinking is not a linear process or set of steps but involves rethinking, reevaluating and exploring new possibilities. | * Let’s come back to this after you have … * How might you combine this with …? * Where else might you go to …? * What other direction might give you a new insight? * Could you start here instead …? * If we removed this step, would that make a difference? * Is this step necessary and what would happen if it was removed or changed? * Can you look at this in a different way? * Why did you pivot at this point? | * I think you have hit a dead end. * You’re obviously on the wrong track. * Start all over again, as you’re wrong. |
| Allow students to provide structured feedback to peers. | Give feedback to one another using our co-developed checklist to guide you. | Give an uninformed opinion or personal preference. |

Adapted from Beghetto (2016).

## Appendix F – factors that promote or hinder creativity

|  |  |
| --- | --- |
| Factors that promote creativity | Factors that hinder creativity |
| * A sense of positive challenge in the work * Positive creative identity * Encouragement of new ideas | * Harsh criticism of new ideas * Dismissal of the unusual |
| * Teams that are collaborative, diversely skilled and idea-focused | * An emphasis on the status quo * Compliance with existing parameters |
| * Freedom in carrying out the creative task * Resilience and ability to see mistakes as learning | * A conservative, low-risk attitude * Anxiety and avoidance of mistakes |
| * Teachers who give time to creative pursuits or are flexible | * Excessive time pressure * No time given at all to creative domain |
| * Support for innovation * A clearly articulated vision for creativity * Appropriate recognition for creativity * Encouragement to pursue interest passions and strengths in the creative domain | * Extrinsic motivation or reward |
| * A range of mechanisms for recognition, assessment and identification of creative potential * Mentors, role models and advanced pathways to progress creative ability | * Inappropriate assessment and identification of creative ability * Lack of opportunity or inequity * Social, geographic or economic disadvantage |

Adapted from Amabile (2012). Also refer to [Appendix K](#_Appendix_K_–) – tips for promoting creativity.

## Appendix G – creative identity

This resource assists educators to understand creative identity through an exploration of inter-related categories of self-beliefs devised by creativity researchers.

|  |  |  |
| --- | --- | --- |
| Creative belief | Example | Description |
| Creative confidence | Confidence in ability to produce creative ideas and actions. | * ‘I am confident I can come up with a creative solution to this problem.’ * ‘I am confident about my ability to solve problems creatively.’ |
| Creative self-awareness | Self-awareness of creative strengths and limitations.  Ability to analyse a situation and determine if it is worth the time and creative effort. | * ‘I know that this is beyond my creative capability.’ * ‘I don’t think this is worth my creative time and effort.’ |
| Creative self-image | One’s own sense of creative self which is shaped as a result of past experiences. | * ‘I am a creative problem solver.’ * ‘I am a creative designer.’ * ‘I provide creative solutions.’ |

Adapted from Beghetto and Karwowski (2023).

## Appendix H – creativity and the Evaluation and Planning Tool 2.0

The [HPGE Policy Evaluation and Planning Tool](https://education.nsw.gov.au/teaching-and-learning/high-potential-and-gifted-education/supporting-educators/evaluate#:~:text=progress%20and%20achievement.-,High%20Potential%20and%20Gifted%20Education%20Policy%20Evaluation%20and%20Planning%20Tool,-The%20High%20Potential) (EP Tool) is designed to support schools in effective implementation of the High Potential and Gifted Education (HPGE) Policy.

Using the tool, school leaders and teachers:

* evaluate the HPGE Policy against the School Excellence Framework (SEF)
* integrate the HPGE Policy into Strategic Improvement Plans (SIPs).

Some sources of evidence for policy statements pertaining to the creative domain are included in this table; however, the EP Tool document should be used in its entirety for school planning purposes.

|  |  |  |
| --- | --- | --- |
| Policy point(s) | Policy content | Examples from the EP Tool |
| 1.1.1 | High expectations and effective, explicit, evidence-based teaching create optimal learning environments where all students are challenged and engaged to achieve their educational potential. | Build a culture of high expectations across the creative domain which focuses on the process of talent development.  Develop evidence-based procedures and processes that encourage and facilitate students pursuing diverse creative opportunities at all levels across all key learning areas or subjects.  Develop creative collaborations with families, school communities and the wider community to promote aspiration, engagement and challenge, for example, Artist in residence programs. |
| 1.2 | Assessment and data are used in an ongoing manner to inform learning and teaching across all domains of potential: intellectual, creative, social-emotional and physical. | Use formative assessment to determine students’ capacity to show connections across disciplines, for example, explore an English concept through drama or scientific phenomena through art.  Develop and use objective, valid and reliable criteria to monitor student progress in the creative domain. |
| 1.3 | High potential and gifted students from all backgrounds have access to quality learning opportunities that meet their needs and aspirations. | All high potential and gifted students, including students who experience disadvantage, are given equitable access to be able to engage and participate at all levels of representative groups.  Facilitation of community-led workshops, for example, art and dance from a range of styles and traditions.  Connect students from diverse backgrounds to creative role models and mentors.  Source opportunities, for example, through the Arts Unit to develop the talent of high potential and gifted students from all backgrounds. |
| 1.4 | High potential and gifted students across all domains require evidence-based talent development to optimise their growth and achievement. | Embed explicit teaching of creative and critical thinking, and problem solving in teaching and learning programs across all key learning areas.  Promote and facilitate opportunities for advanced learning pathways and acceleration in creative subjects or extra-curricular programs such as single subject acceleration or placement in groups with like ability peers.  Use of student voice in the creative design process for school and community programs, environments and initiatives. |
| 1.5 | Learning environments which support the social-emotional development and wellbeing of high potential and gifted students enable them to connect, succeed and thrive. | Establishment of sustainable mentor programs in the creative domain, in collaboration with parents, and/or school and wider community.  Embed opportunities for the creation of stories in teaching and learning programs involving puppetry, drama, role play, posters and/or student constructed films. |
| 1.6 | Engagement with quality research and ongoing professional learning builds teacher and leadership capacity to improve growth and achievement for all high potential and gifted students. | Involve a broad range of staff in professional learning in creative arts, for example, with the Arts Unit, Art Gallery of NSW.  Facilitate staff professional learning in quality pedagogy to support evidence-based teaching of creative and critical thinking across all key learning areas.  Utilise external experts to mentor and provide feedback to teachers with expertise and experience in coordinating creative development programs. |
| 1.7 | The department supports differentiated and evidence-based procedures, programs and practices for growth and achievement of all students, including high potential and gifted students | Utilise community grants in the arts to enhance talent development programs, particularly for students who experience disadvantage and may have limited opportunities.  Review differentiated creative mentoring programs to ensure they extend and appropriately support high potential and gifted students.  Evaluate where creative and critical thinking tools and strategies can be built into teaching and learning programs across all key learning areas.  Collate and utilise data gathered on student involvement and achievement in external creative pursuits to further talent development. |

## Appendix I – practical strategies and resources for schools

|  |  |
| --- | --- |
| General/Subject/Key Learning Area | Strategies and resources |
| Generalised opportunities and resources to promote creative thinking | * Finding multiple solutions to open-ended questions * Looking for multiple perspectives * Rank multiple solutions in order of effectiveness * Low-floor, high ceiling learning and assessment * Opportunities to create forced relationships, for example, how is the character of a book like a triangle? * Asking: What if …? * Provocative questioning * Choice in delivery of learning * Finding opportunities for storytelling and sensory experiences (including nature and outdoor environment) * Co-negotiated tasks and products * Guest speakers, incursions and excursions, providing opportunities to see real-life creativity * Integration of subject areas, for example, Islamic art and mathematics * Harvard University – [Project Zero’s Thinking Routine Toolbox](https://pz.harvard.edu/thinking-routines) (includes I see, I think, I wonder … strategy) * [OECD class friendly rubric for creative and critical thinking (PDF 63.1 KB)](https://web-archive.oecd.org/2021-10-07/531025-class-friendly-domain-general-rubric.pdf) * [P21’s Frameworks for 21st Century Learning](https://www.battelleforkids.org/insights/p21-resources/) * [TASC: Thinking Actively in a Social Context. A universal problem-solving process: A powerful tool to promote differentiated learning experiences](https://www.researchgate.net/publication/254095373_TASC_Thinking_Actively_in_a_Social_Context_A_universal_problem-solving_process_A_powerful_tool_to_promote_differentiated_learning_experiences) * [Tony Ryan’s Thinkers Keys](https://www.thinkerskeys.com/) * [EarthMovers](https://theearthmovers.org/) * Bloom’s taxonomy through [Digital Learning Selector: Learning Activities](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Browser) (see [Appendix D](#_Bloom’s_Taxonomy)) * FFOE –fluency, flexibility, originality, elaboration (see [Appendix D](#_FFOE:_Fluency,_Fflexibility,)) * Maker model (see [Appendix D](#_Maker_Modelmodel)) * SCAMPER model (see [Appendix D](#_SCAMPER_Modelmodel)) * Williams model (see [Appendix D](#_William’s_Modelmodel)) * [Brainstorming](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/542) * [Perspectives](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/545) (previously Six Thinking Hats) * [Creativity in education: What educators need to know](https://education.nsw.gov.au/teaching-and-learning/education-for-a-changing-world/thinking-skills/creativity-in-education--what-educators-need-to-know) * [Finding high potential in the creative domain Tier 2 Module 4](https://schoolsnsw.sharepoint.com/sites/HPGEHub/SitePages/modules/course-1-menu.aspx?OR=Teams-HL&CT=1633056221893) * MyPL Pre-learn critical and creative thinking in practice (NR32229) * [Early Learning Resources](https://education.nsw.gov.au/teaching-and-learning/curriculum/early-learning/early-learning-resources#Resources1) for teachers, Projects for learning, Outcome 4 [Creativity, imagination, reflexivity and connection (DOCX 79.8 KB)](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Feducation.nsw.gov.au%2Fcontent%2Fdam%2Fmain-education%2Fteaching-and-learning%2Fcurriculum%2Fearly-learning%2Fprojects-for-learning-creativity-imagination-reflexivity-and-connection.docx&wdOrigin=BROWSELINK) and [STEM (DOCX 76.2 KB)](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Feducation.nsw.gov.au%2Fcontent%2Fdam%2Fmain-education%2Fteaching-and-learning%2Fcurriculum%2Fearly-learning%2Fprojects-for-learning-STEM.docx&wdOrigin=BROWSELINK) |
| STEM | * [STEM curriculum resources](https://education.nsw.gov.au/teaching-and-learning/curriculum/stem/stem-curriculum-resources) – for example, Flow Hive * [stem.T4L (Technology 4 Learning) Learning Library](https://schoolsnsw.sharepoint.com/sites/StemShareLibrary/SitePages/STEMShare.aspx) – for example, 3D printing and podcasting kits * [Design thinking](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/619) for example, sustainable city, leisure park * Number sense solution generation * [NRICH](https://nrich.maths.org/teachers) * [Maths 300 – free lesson previews](https://www.maths300.com/) * [Australasian Problem Solving Mathematical Olympiads (APSMO) resources](https://apsmo.edu.au/) – free sample maths lessons, problem of the week |
| English | * Wide-reading contract opportunities * Converting writing into raps, poetry, drama and songs * Digital storytelling, including podcasts, blogging, multi-media texts and virtual reality experiences |
| Creative Arts | * [Fostering critical and creative thinking in Visual arts 7–10](https://education.nsw.gov.au/teaching-and-learning/curriculum/creative-arts/planning-programming-and-assessing-creative-arts-7-10/visual-arts-7-10/fostering-critical-and-creative-thinking-in-visual-arts-7-10) * [Tahj’s story](https://education.nsw.gov.au/teaching-and-learning/high-potential-and-gifted-education/supporting-educators/illustrations-of-practice/tahj-s-story---film) (creative Aboriginal student) * [Tilly Illustrations of practice (IoP)](https://education.nsw.gov.au/teaching-and-learning/high-potential-and-gifted-education/supporting-educators/illustrations-of-practice/tilly-s-film) (creative student with disability) * [Zahra’s story](https://education.nsw.gov.au/teaching-and-learning/high-potential-and-gifted-education/supporting-educators/illustrations-of-practice/zahras-story) (creative student in dance) |
| Entrepreneurship | * [Entrepreneurial learning – design lessons](https://education.nsw.gov.au/teaching-and-learning/curriculum/career-learning-and-vet/curriculum-support/entrepreneurial-learning/design) * [Australian Curriculum’s illustrations of practice – Career education: linking learning and social entrepreneurship](https://www.australiancurriculum.edu.au/resources/general-capabilities-and-career-education/illustrations-of-practice/career-education-linking-learning-and-social-entrepreneurship/) * [T4L Kids magazine](https://t4l.schools.nsw.gov.au/t4l-kids.html) * School event planning |

## Appendix J – practical applications of creativity research for P–12 classrooms

**Early learning settings**

Child directed environments can encourage young students to explore their environments and interests. Teachers can:

* provide opportunities for structured exploration of uncertainty, for example, guided play which:
* allows creative imagination where children develop their own content, direction and experience, for example, playful and creative stories, building towers, water play, arts and craft, dramatic play, creative movement and sound composition
* assists younger children with the language to verbalise emotions and build character
* provides pretend experiences to promote imagination and creative expression.
* encourage communication and recognise and model unique perspectives by:
* providing opportunities to construct and test their own connections and viewpoints
* encouraging self-awareness of ideas and how to communicate these to others
* encouraging self-expression within topic areas and subject content.
* provide opportunities for symbolic and tangible expression of creativity by allowing for exploration through different mediums and tools, including digital and audio.

**Primary settings**

Younger students continue to build expertise in creativity skills. Teachers can:

* engage students in skill-based activities within creative domains
* remember that any domain can be considered creative
* model cognitive processes, inclusive of creativity through think-alouds and brainstorming
* explicitly teach the creative process through creativity scaffolds, for example, Digital Learning Selector, design thinking, Harvard Thinking Routines, Bloom’s Taxonomy, Differentiation Adjustment Tool, Thinking Actively in a Social Context (TASC), Williams or Kaplan models and Thinkers Keys (see [Appendix C](#_Appendix_C_–) and [Appendix H](#_Appendix_H_–)).
* encourage intrinsic motivation through sincere praise of students who demonstrate perseverance and effort
* help students discover new and interesting concepts through independent use of scaffolds and thinking routines
* promote and model that ‘sameness’ will not provide the most unique creative response
* provide socially dynamic grouping options throughout a range of learning activities
* counter stereotypical notions that students who ask unusual questions are troublemakers
* capture student interest through finding and solving problems beyond the classroom walls
* reduce the degree of formal evaluation so students experience less judgement
* explicitly teach the idea of creative identity to reduce self-doubt and promote a focus on growth mindsets
* provide opportunities for students to come up with ways of solving a problem and celebrate unique solutions
* spontaneously respond to and be flexible towards students who redirect learning
* explicitly teach risk-taking and the value of making mistakes to get closer to a viable solution.

**Secondary settings**

Older students may continue to require modelling on how to work through the creative process in and across subject areas. Teachers can:

* build on creative processes and skills explicitly taught in the younger years
* model thought processes in the classroom and in learning tasks
* use student interest profiles to engage students in relevant, self-chosen topics
* provide choice and work with students to co-develop negotiated tasks that build on skills
* challenge understanding through creative questioning and problem solving and finding
* encourage diversity and alternative solutions to solve problems and think of new problems
* translate knowledge of one subject into another, building on and synthesising complexities of expertise in each area
* explicitly teach perseverance and growth mindsets in taking the courage to pursue complex problems and novel solutions
* encourage hypothesis making and alternate ways to prove these through cross-curricular approaches to learning
* model real-world approaches to creativity by using authentic problems and finding unique solutions through design thinking in groups
* stimulate creativity through exploration of cause-and-effect relationships, synthesis of ideas and critical thinking
* support application of knowledge through a range of activities resulting in product choices
* compare and contrast ideas and provide depth within a subject area to promote alternative viewpoints
* encourage creative aspiration and career pathways for advanced creative learners.

Adapted from Amabile (2012), Beghetto and Karwowski (2023) and Duckworth (2006).

## Appendix K – tips to promote creativity

|  |  |
| --- | --- |
| General/Subject/Key Learning Area | Strategies and resources |
| ****Model creativity**** | * Be a creative role model * Send positive messages about the value of creativity * Share creative thoughts aloud and demonstrate creative actions * Share journeys of authentic creative individuals |
| ****Build self-efficacy**** | * Build a strong base for creativity through intentional lessons and embedded techniques in all curriculum content * Express unlimited, yet realistic goals about creative potential and accomplishments * Help students believe in their creative abilities |
| ****Question assumptions**** | * Make questioning a regular and intentional practice in the classroom * Explicitly teach students how to ask and consider provocative questions * Highlight that by questioning assumptions, one is actually learning * Ask how facts can be applied to new contexts to produce new ideas and/or products * Place similar importance on questions and answers |
| ****Define and redefine the problem**** | * Promote creative performance by encouraging defining and redefining of a problem * Have students choose their own ways to solve problems, topics, and products and to rethink their choices as necessary |
| ****Encourage idea generation**** | * Encourage generation of many ideas and solutions without fear of judgement or criticism * Suggest new approaches to ideas * Praise students who develop many ideas and encourage them to identify which ones can be best developed into quality ideas |
| ****Cross-fertilise ideas**** | * Teach students to think across disciplines and subjects * Ask students how their ideas might be integrated across their own interests, skills and abilities |
| ****Allow time for creativity**** | * Provide students with time to understand and reflect on a problem * Give free-thinking space for idea generation |
| ****Explicit instruction for creativity**** | * Identify where creativity can be explicitly built into existing core material, assessments and tasks * Ask questions that require not just fact recall but analysis and creative output |
| ****Reward creative ideas and products**** | * Talk about the value of creativity and praise creative efforts and expression * Reinforce that creativity does not depend on agreement but expression and synthesis of ideas and thoughts * Communicate that not all creative products can be evaluated or objectively graded |
| ****Encourage sensible risk-taking**** | * Relay that creativity may require sensible risk-taking * Describe how creative people often make mistakes, fail and experience discomfort when taking risks * Explicitly teach how to take small safe risks and how to assess risk |
| ****Tolerate ambiguity**** | * Reiterate that creativity often involves being in a place of insecurity and feeling unsure * Describe how creative thought might come in steps, sometimes with pauses, and to accept that ideas might take time or require a re-think * Communicate that sometimes students might need to evaluate whether to persevere with an idea or start again |
| ****Allow mistakes**** | * Share how some of the greatest creative minds have been ostracised in the beginning due to their original ideas. For example, Galileo. * Explore social constraints and values which hindered or enhanced creativity * Avoid over-correction in the classroom which hampers risk-taking and encourage the confidence to challenge the majority or make mistakes * Ensure students are free to ask, explore, discuss and think independently * Reinforce that mistakes are an opportunity for learning, growing and creativity |
| ****Identify and surmount obstacles**** | * Share that creative thinkers may encounter resistance in the short term * Describe personal obstacles to creative thought, including from family, friends, and colleagues and what you did in response * Suggest how to analyse obstacles and ways to overcome them |
| ****Teach self-responsibility**** | * Teach how to take responsibility for both success and failure * Teach students how they can understand their own creative processes and skills, and how to handle self-criticism and pride |
| ****Promote self-regulation**** | * Communicate how students can self-regulate the creative process through questioning, analysis, record keeping and an awareness of signs of issues * Teach strategies that enable scaffolding, organisation and successful completion, free from distractions |
| ****Delayed gratification**** | * Teach that being creative may require work on a project for an extended period without immediate rewards or praise * Give examples of how long-term gains can be worth the wait * Teach a growth mindset which focuses on effort rather than immediate gratification |
| ****Encourage creative collaboration**** | * Teach awareness that collaboration can spur creativity especially if students are influenced by other creative minds * Ensure students learn by example by sharing stories of how other creatives collaborate and for what purpose, for example, group performances * Point out how students can learn from others’ creativity across many disciplines * Seek out experts for mentorship |
| ****Imagine other viewpoints**** | * Ask students to seek different viewpoints * Encourage student understanding and respect of other points of view and how these have led to creative thought and action * Provide examples of how experience can enhance creative thinking and contributions to society |
| ****Recognise person-environment fit**** | * Discuss societal and individual views in context * Discuss how personal environment may impact creativity, including social norms, culture and family background * Ask students to examine which environments enhance or hinder their creativity |
| ****Find excitement**** | * Remind students what excites them and what contributes to their success * Explore things that invoke creative passion and interest in a diverse range of students and offer a range of opportunities to engage students * Help students to uncover what their passion or interest might be and how they might develop it |
| ****Seek stimulating environments**** | * Help students to develop the ability to choose environments that stimulate creativity in the classroom, at and beyond the school * Seek out opportunities beyond the classroom that might provide advanced learning in fostering creativity * Involve students in role-play and authentic scenarios that foster creative thought and action |
| ****Play to strengths**** | * Students share their strengths and describe how a talent was developed * Ask students what their creative strengths are and how they know this * Provide flexibility for students to demonstrate creativity through choice of tasks |
| ****Grow creatively**** | * Encourage creative growth and discuss what might happen if experts become too comfortable * Outline how entrenchment of ideas may hinder creativity or lead to complacency |
| ****Spread the word about creative thought**** | * Tell colleagues and parents or carers about the importance of creativity * Use examples of student work to demonstrate high potential in the creative domain and use these in discussions with colleagues * Dispel myths about high potential creative students and stereotypical misconceptions about who these students are * Continue to learn about the creative domain of potential and how it relates to a range of subject areas and disciplines, utilising this knowledge when planning and programming for students * Network with other educators who are interested in the creative domain of potential |

Adapted from Sternberg and Williams (n.d).

## Appendix L – legacy projects

**What are legacy projects?**

Legacy projects are complex, real-world opportunities designed to make learning meaningful and encourage students to think creatively (Beghetto 2018).

Students apply creative thinking into something that matters to them to have a positive impact on others. They can learn the process of developing creative products for their own context to make a difference.

**How do legacy projects promote creative thinking?**

Legacy projects provide structured opportunities for students to experience and develop creative thinking skills across a broader range of subject areas. Skills can include:

* building creative confidence
* engaging in productive struggles with complex problems
* learning how to weigh the costs and benefits of risk-taking
* experiencing and discussing small successes, setbacks and failures
* reflection, mindfulness and metacognition.

**Principles and examples of questions to structure legacy projects**

|  |  |  |
| --- | --- | --- |
| Principle | Questions to ask | One example |
| Find a problem that matters. | * What topic concerns you? * Has this topic been recognised before? * What do you already know about this topic and how can you learn more? | * Bullying at school has been addressed by the staff but not the students themselves. * I know some friends who have been bullied. I might ask a range of students from all ages what they know and think about bullying. * We could explore staff, parents and online sources to learn more about bullying. |
| Understand the argument for solving the problem. | * Why is this problem worth solving? * Why do you want to solve this problem? * What would happen if nothing changed? * How do you know? * Who can help you? | * Student voice and agency is key in understanding and responding to bullying. My friends have been bullied and I can see the impact on confidence, learning and wellbeing. * Strategies so far have had an adult perspective and have been driven by teachers, not students themselves. * Bullying can be subtle and hidden from adults. Bullies evade teachers and seek attention. |
| Work with others to generate, evaluate and implement potential creative possibilities to address the problem. | * Who can help you to think through the problem? * What are new ways of looking at the problem? * What are some possible ways to address the problem? * What might you be missing in understanding the problem better? * Which possibilities are most viable and why? * What are the risks or potential setbacks? * How will you test your possibilities? * How will you document and determine alterations? * Should you take a few steps back to view the problem or possibilities differently? * What would it take for you to move forward in solving the problem? | * We can bring attention to the issue and bring student voice and agency into seeking possibilities to solve the issue. * We can ask other students who might like to contribute to finding a solution. We can create catchy messaging, use drama performances, write jingles, have lunchtime stalls, create posters, begin peer-mentoring teams and leaders to highlight the issue and ways to counteract bullies. * We can outline the reasons why some people bully and use peer pressure to deter potential behaviours. We can tap into the strengths of students to help and seek speakers to represent the voice of students. We can trial ideas and test which are most effective. |
| Work towards developing a creative solution that results in a positive outcome. | * Which ideas will you carry forward? * Who might help to enable a way forward? * What impact will your solution make? How will you know? * Have you anticipated any unexpected outcomes? How might these be addressed? * What would it take for your solutions be sustainable and make a lasting impact? | * The ideas with the most impact can be trialled and reviewed. We can start small and train a team of students to be mentors. We can ask students to give ongoing feedback through the mentors. * An unexpected outcome is that bullies will become mentors and have the courage to speak about why. Student agency will determine future outcomes. |

**Adapted from Beghetto (2018).**

## Appendix M – the Differentiation Adjustment Tool and creativity

The [Differentiation Adjustment Tool](https://education.nsw.gov.au/teaching-and-learning/high-potential-and-gifted-education/supporting-educators/implement/differentiation-adjustment-strategies) (DAT) contains 9 deliberate adjustments to support teachers to meet the specific learning needs of high potential and gifted students. Adjustments may be made to content, the learning process, product and learning environment. For each adjustment, there are:

* strategies
* practical examples of application
* alignments with [Digital Learning Selector](https://app.education.nsw.gov.au/digital-learning-selector/) resources.

Examples supporting the creative domain are included in the table below; however, all 9 adjustments of the DAT should be applied in full to planning and teaching for optimal effect. Support resources can be found in the [DAT package](https://schoolsnsw.sharepoint.com/sites/HPGEHub-resources2/SitePages/D00-Differentiation-Home.aspx) on the [HPGE Professional Learning and Resources Hub](https://schoolsnsw.sharepoint.com/sites/HPGEHub/SitePages/Home.aspx) and in the [Digital Learning Selector](https://app.education.nsw.gov.au/digital-learning-selector/).

|  |  |  |
| --- | --- | --- |
| Adjustment | Strategies related to the creative domain | Practical examples to promote creativity and DLS |
| Abstraction | * Going beyond superficial facts * Examining content meaning * Scrutinising underlying ideas | * Synthesising information from a complex to simple level using creative systems of classification * Creating symbols to represent a sequence of ideas or procedure * Creating simplified systems to unpack complexity |
| Authenticity | * Real-world problems * Real audiences * Contemporary issues * Modelling exemplars | * Scrutinising contemporary (media) issues and using these to debate ideas * Inviting an expert audience to showcase proof of learning * Addressing current events and ideas to analyse complex concepts * Unpacking exemplars to model and guide high expectations * Evaluating learning and progress by experts in the field * Exploring the methods of inquiry that experts in various domains use to seek their information |
| Challenge | * Integration across disciplines * Transfer of knowledge * Undertaking original research * Using controversy and provocation to problem solve | * Creating opportunity for negotiated independent projects (following pre-test analysis) * Applying new skills and knowledge to a different context * Co-developing and co-designing cross-disciplinary projects * Justifying thinking when given a provocative question and communicating it in a variety of ways for different audiences * Including students in debates and/or robust discussions viewed from diverse perspectives * Using real-world problems from the local community to create a problem-based learning project * Finding and explaining shifts in thinking from the beginning of the learning |
| Choice | * Negotiating alternative tasks, assessments and products * Planning open-ended tasks * Designing student interest tasks * Permitting a diversity of modes of communication * Exploring options | * Giving choice to demonstrate evidence of learning * Giving students the opportunity to create their own alternatives of how they will learn * Accessing a range of questions to stimulate thinking and discussion * Open-ended questioning which (more appropriately) aligns with different interest areas * Encouraging free thinking, brainstorming and planning of the focus for learning * Selecting or differentiating outcomes to meet specific interests * Giving options to choose perplexing ideas for further exploration |
| Complexity | * Making connections * Problem solving and finding * Inquiry-based learning | * Posing provocative questions that lead students toward a deeper analysis * Asking students to find a connection between usually unrelated ideas * Comparing different concepts which may span different disciplines * Using the ‘What if …?’ question to stimulate thinking * Creating verbal or visual analogies to explain understanding * Differentiating outcomes using higher order skills such as analysis, synthesis or creation |
| Creative and critical thinking | * Original design or responses * Alternative options * Innovative communications * Encouraging risk-taking and experimentation * Idea exploration * Discovering underlying principles * Divergence * Flexibility | * Creating unique products made from adapting others’ ideas * Clarifying the causes and effects of different events, ideas or processes * Organising different ideas into unique categories or systems * Devising questions, adapting and posing these to different stakeholders to elicit responses from a variety of perspectives * Creating a variety of different consequences using ‘If … then …’ |
| Higher-order thinking | * Creativity * Making comparisons * Prioritising * Evaluating * Synthesising information * Investigating opposing ideas * Identifying inconsistencies | * Creating or co-creating new or unique products or responses * Asking for a deeper analysis and justification of students’ responses * Developing ‘What if ...?’ scenarios to provoke thinking * Using concept maps to visualise and explain thought processes or research * Synthesising information and evaluating the most relevant ideas when solution finding * Making evaluative judgement about ideas using thinking strategies, for example, plus, minus, interesting (PMI) * Speculating on probable future applications or possibilities |
| Learning Environment | * Motivation * High expectations * Flexibility * Autonomy * Collaboration * Leadership * Growth mindsets | * Giving opportunity to showcase strengths in a variety of applications and to a diverse audience base * Providing variable means of communicating and acknowledging peers * Providing differentiated product options for assessments * using [Think-Pair-Share](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/645) routines to encourage collaboration, active reasoning and communication * Building student-voice opportunities into daily instruction * Creating an environment that encourages experimentation and risk-taking * Providing wait time to give opportunity for reflection * Emphasising personal best, value of effort, growth and positive attitudes towards learning |

## Appendix N – opportunities and resources beyond school

|  |  |
| --- | --- |
| Subject/KLA | Opportunities and resources |
| General/multi-subject or discipline | * [Tournament of Minds](https://tom.edu.au/) * [2024 Student Programs | Education – University of New South Wales (UNSW) Sydney](https://www.unsw.edu.au/arts-design-architecture/our-schools/education/professional-learning/gerric-gifted-education/gifted-students-parents/2024-student-programs) * [CREATE Centre (Creativity in Research, Engaging the Arts and Transforming Education, Health and Wellbeing) – University of Sydney](https://www.sydney.edu.au/arts/our-research/centres-institutes-and-groups/create-centre.html) |
| English | * [Bell Shakespeare for students](https://www.bellshakespeare.com.au/student-programs) * [What Matters? Whitlam Institute](https://www.whitlam.org/what-matters) * [Dorothea Mackellar Poetry Writing Competition](https://dorothea.com.au/) * [Red Room Poetry – Poem Forest](https://redroompoetry.org/projects/poem-forest/) * [CBCA (Children's Book Council of Australia) Collide Book Trailer Competition](https://www.cbcansw.org.au/collide-book-trailers) * [Public speaking competition – The Arts Unit](https://artsunit.nsw.edu.au/program/public-speaking) * [ABC Heywire storytelling competition](https://www.abc.net.au/heywire/competition) for young regional, rural and remote students (16 to 22 years) * [Beyond Words](https://beyondwords.dymockstutoring.edu.au/) story writing competition (including awards for priority equity groups) * [Australian Poetry Slam](https://www.australianpoetryslam.com) |
| STEM | * [Game Changer Challenge – NSW Department of Education](https://education.nsw.gov.au/public-schools/game-changer-challenge) * [Little Scientists Australia](https://littlescientists.org.au/) * [The National Young Mathematicians’ Award – NRICH](https://nrich.maths.org/nyma) * [Mathematics and Statistics Research Competition – University of Melbourne](https://ms.unimelb.edu.au/engage/outreach/mathematics-and-statistics-research-competition) * [APSMO Maths Quest, Explorer, Games Olympiad](https://apsmo.edu.au/) resources and competitions * [The Young Scientist Awards Program – Science Teachers’ Association of NSW (STANSW)](https://stansw.asn.au/YoungScientist/YoungScientist/About-Young-Scientist.aspx?hkey=0a924c2a-84d3-4028-a67a-ef2b6be30dfc) * [Competitions at ANSTO – Australia’s Nuclear Science and Technology Organisation (ANSTO)](https://www.ansto.gov.au/education/primary/competitions-at-ansto) * [Creativity in Research, Engineering, Science and Technology (CREST) – CSIRO](https://www.csiro.au/en/education/programs/crest). For example, Future Shapers and Young Information and communications technology (ICT) Explorers * [Fire-Ed Up Challenge](https://fire-edup.com.au/fire-ed-design-challenge/) * [Powerhouse Connect](https://powerhouse.com.au/) projects * [Sleek Geeks Science Eureka Prize – Primary and Secondary School](https://australian.museum/get-involved/eureka-prizes/enter/sleek-geeks-science-eureka-prize/) – The University of Sydney * [Programs – Re-Engineering Australia (REA) Foundation](https://rea.org.au/for-students-and-teachers/) * [STEM Industry School Partnerships (SISP) Focus Projects](https://sispprogram.schools.nsw.gov.au/stem/stem2111.html) |
| Creative Arts | * [The Arts Unit](https://artsunit.nsw.edu.au/), including [Schools Spectacular](https://artsunit.nsw.edu.au/schools-spectacular), [Spectacular Schools – Inspired: Find inspiration](https://artsunit.nsw.edu.au/spectacular-schools-inspired/find-inspiration), [Connections Showcase 2023: City, Country, Coast](https://artsunit.nsw.edu.au/creative-resource/connections-showcase-2023), [Bangarra Dance Theatre partnership](https://www.bangarra.com.au/community/youth-program-partnerships/) and [Mural in a day](https://artsunit.nsw.edu.au/program/mural-in-a-day) – NSW Department of Education. * Harmony Day [Moving Forward Together](https://movingforwardtogether.org.au/) – art, film, song competitions – UNSW * [Museum of Contemporary Art: Creative Connections](https://www.mca.com.au/events-programs/calendar/creative-connections/) and [Kids activity: Creative adventures with Pip and Brook!](https://www.mca.com.au/learn/kids-and-families/kids-activity-creative-adventures-pip-and-brook/) * [Wild at Art](https://www.acf.org.au/wild-at-art-competition) * [Young Archie – Art Gallery of NSW](https://www.artgallery.nsw.gov.au/prizes/young-archie/enter/) * [Where to from here? Future directions, planning and pathways](https://education.nsw.gov.au/teaching-and-learning/curriculum/creative-arts/professional-learning-creative-arts-k-12/creative-cast-podcast/where-to-from-here). |
| Social advocacy and entrepreneurship | * [Creativity, STEM and entrepreneurship](https://education.nsw.gov.au/teaching-and-learning/curriculum/stem/stem-curriculum-resources/unleash-creativity-in-students) * [Academy for Enterprising Girls](https://enterprisinggirls.com.au/) * [Future Leaders](https://www.futureleaders.com.au/index.php) * [Westpac Youth Impact Challenge](https://www.youthimpactchallenge.com.au/) |

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