"Does teaching creativity across the curriculum lead to young people who are better prepared for their future in a changing workforce?"

Penryn Creativity Collaboratives:

Preparing for a Creative Future

Year One Report: Question, Challenge & Explore

Funded by:
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Executive Summary

Creativity Collaboratives is a national pilot programme of eight clusters of English schools who are working together to test innovative practices in teaching for creativity, sharing learning to facilitate system-wide change. The programme is funded by Arts Council England with the generous support of Freelands Foundation, and launched in October 2021. Creativity Collaboratives: Penryn Partnership [CC:PP] is one of the pilot programmes, and over three years is focussed on exploring the central question:

> *"Does teaching creativity across the curriculum lead to young people who are better prepared for their future in a changing workforce?"*

The partnership is led by Penryn College, an 11-16 school on the south Cornish coast, and incorporates the existing Penryn Partnership (the College, its 8 feeder primary schools and 2 Area Resource Base units), a Creativity Network that comprises a group of industry and cultural partners, and the research partner, the School of Education, University of Exeter. In Year 1 we set out to *'Question, Challenge and Explore'*, working towards creating a *'Preparing for a Creative Future'* framework by addressing three questions:

RQ1: Why are creative skills needed in a changing workforce?

RQ2: What creative skills are needed to be developed by Cornish students to become better prepared?

RQ3: How do we best prepare teachers for teaching for creativity?

Methods included a literature review, focus groups, gathering post-16 destination data, interviews, meeting notes, existing pedagogic framework synthesis and the Creativity Collaboratives baseline survey developed by Durham University, alongside a similar survey for industry and cultural partners. An initial continuing professional day [CPD] day for teachers also occurred, as did the launch of the Action Research Project that will form the focus of year 2. Following appropriate transcription of qualitative data, thematic analysis was undertaken, with Durham University providing pre-analysed statistical insights into the survey data for the partnership which was then summarised as appropriate to our research questions. All ethical procedures and permissions were carried out through the University of Exeter Ethics Committee, and University of Durham for secondary survey data.

Literature Review and Ensuing Framework

The review summarises understandings from both the literature and industry reports:

An Uncertain Future

The 21st century context is widely characterized by uncertainty and change in interconnected social, political, environmental, technological and economic domains. Commentators identify drivers of change including: climate crises; innovations in science and technology; global connectivity leading to increasingly integrated global labour markets and increased uncertainty; changes in the world population changing the nature of careers. It is therefore impossible to predict future skills, meaning there is a need for continuous adaptation.

What Skills Are Needed For a Changing Workforce?

Our brief synthesis combines the predictions of a selection of key reports and follows the skills groupings outlined in the OECD Learning Framework 2030 (OECD, 2018): cognitive and metacognitive; social and emotional; physical and practical.

Why is Creativity Needed?

Arguments from the Durham Commission report are synthesized with perspectives from the literature to demonstrate why creativity features so highly in the skills demanded for the future workforce:

- ***Creativity and the Economy:*** *for industry creativity is promoted for change through the facilitation of flexibility and adaptability; it is seen as crucial for a knowledge-based economy, and for economic development; creativity and technology are seen as ripe for new innovations; creativity and the creative industries are also highlighted as key.*

- ***Creativity for the Future Workforce Beyond Economic Growth:*** *globalisation, ecological destruction and climate change compel us to consider the value of creativity for the future beyond economic utility. Two key areas are creativity and sustainability, and creativity and wellbeing.*

The Cornish Context:

The largest industry sector in Cornwall is agriculture, forestry and fishing, followed by construction, and then professional, scientific and technical industries. Cornwall has a higher proportion of businesses with a low turnover (less than £50,000) than the UK as a whole, and fewer businesses with a turnover of £1m or more. Cornwall is in the most deprived decile for both the income and employment scales for England. It is host to over 4,800 of the 1.4 million Creative Industries jobs in the UK, with its long heritage in the arts including Falmouth University. The Creative Industries are seen as a potential growth area for the UK.

All of These Logics should and can be Critiqued in the Context of the CC:PP.

With creativity an inherently change-based process, there is potential for young people to respond to workforce need by acquiring creative skills, but also have the ambition to contribute to shaping Cornwall's creative and entrepreneurial workforce.

Defining Creative Skills:

Research has shown that teachers often find it hard to define creativity or to recognise it in students. We have therefore identified producing a definition of creative skills as a priority. Our report draws on a range of rhetorics of creativity; and notes our intention to recognise it in every discipline. We acknowledge key historical definitions from the NACCCE report and the Durham Commission. We have synthesised these understandings together with other key creativity theories (Possibility Thinking, Wise Humanising Creativity, Posthumanising Creativity, Five Dimensional Model of Creativity, the Australian Curriculum model, the UK Qualifications and Curriculum Authority Framework) to produce a draft Penryn Partnership Model of Creative Skills structured as follows:

Findings for RQ1

Why Are Creative Skills Needed in a Changing Workforce?

Findings showed pertinent discussions of the particular creative skills needed for a Cornish workforce, and broadly reflected the literature review themes. The wider context of the needs of the workforce were thematised as follows: creativity for change, creativity and wellbeing, creativity and sustainability, creativity and collaboration, and creativity and communication. The needs of specific parts of the workforce were articulated within the themes: creativity and the knowledge-based economy, creativity and innovations in science and technology, and creativity and the creative industries. Themes that did not emerge are also notable: global interconnectivity was not discussed, nor was diversity or the diversification of the workforce; wellbeing was only mentioned by one child.

Findings for RQ2

What Creative Skills are Needed to be Developed by Cornish Students to Become Better Prepared?

The data collected from the focus groups and survey of industry and cultural partners was analysed using the 'Creative Skills Framework' as presented in the literature review as a thematic structure. The majority of the comments made by participants related well to the framework, but some data fell into other areas, including: associating creative skills with specific subjects and types of activity, primarily with the arts; creativity was often described in terms of problem-solving skills, as well as making connections; creativity was seen as contributing to young people connecting to the world around them, to the environment, and to seeing the bigger picture; it was closely connected with transdisciplinarity. These emergent themes and other RQ2 analysis were used to develop the Creative Skills Framework. It is important to note no one skill is more important, and that the five skills meld together to identify creativity in the CC:PP, at the end of Year 1, as follows:

Dialogue and Collaboration

Drawing in notions of dialogue, questioning, communicating and collaborating, in both verbal and embodied ways. Features of this skill are:

- *Posing and responding to questions, including finding and solving problems.*
- *Working individually, collaboratively and within a community.*
- *Negotiating difference, responding appropriately to others' ideas.*

Honing and Developing an Idea

This combines the skills needed to develop creative ideas, incorporating aspects of self-reflection together with development of techniques and understanding of the rules, and the persistence needed to progress creative ideas and actions. Features of this skill are:

- ***Reflection:*** *analysing, evaluating and considering alternatives.*
- *Understanding the rules and consequences of different kinds of creative action, developing the techniques needed to progress.*
- ***Persistence:*** *sticking with difficulty, tolerating the unknown, crafting and improving work.*

Empowered Action

Foregrounding pupils' own agency in creative action, as a skill this includes the ability to take risks and question accepted ideas, the capacity to be immersed, and the ability to act on creative ideas. Features of this skill are:

- ***Risk taking:*** *challenging assumptions, making mistakes, delivering surprising ideas.*
- ***Immersion:*** *being immersed in activity and focusing, concentrating.*
- ***Taking action:*** *being a self-determined, active learner, putting ideas into action.*

Being Imaginative and Playful

This is the ability to utilise imagination, to improvise playfully, and to generate and try out possibilities: as with possibility thinking, it is the ability to go beyond an understanding of 'what is' to consider instead 'what might be'. Features of this skill are:

- ***Play:*** *improvising (responding on the spot), trying things out, purposefully playing, being open-ended.*
- ***Imagination:*** *going beyond the obvious with curiosity, considering different perspectives.*
- ***Considering possibilities:*** *asking, what if?*

Generating New Ideas that Matter

This includes the ability to combine innovation with critical attention to the consequences of ideas, considering the ethical impact of creative actions, and understanding diverse values. Features of this skill are:

- ***Innovation:*** *exploring / generating ideas that are new (to the student).*
- *Considering the ethical consequences of creative ideas and actions.*
- *Understanding diverse values and how they matter differently.*

This process concluded in the development of a Preparing for a Creative Future Draft Framework which identifies progression through the five key creative skills from the Early Years Foundation Stage to Key Stage 4 – this is available in the main body of the report.

Findings for RQ3

How Do We Best Prepare Teachers for Teaching for Creativity?

We developed a framework for teaching for creativity which was synthesized from two prior creative pedagogies reviews:

Empowerment, Autonomy and Agency:

- Learners and teachers both have a sense of agency and are allowed to express themselves.
- Students are empowered to act independently and with agency (exerting power), developing and trying out their own ideas.

Risk, Immersion and Play:

- Teaching/ facilitation creates space for these three processes to occur.
- A trusting space is developed in which mistakes are possible and failure can be accepted.

Possibilities:

- Multiple possibilities are allowed both in terms of thinking and spaces.
- 'What if' questions are used to narrow or broaden these possibilities.

Generating and Exploring Ideas:

- There is a climate of openness – a high degree of acceptance of children's ideas.
- Tensions between openness and structure – a need to balance openness with structure to support learning.
- A sense of both stepping back and stepping in, to balance control and freedom.

Individual, Collaborative and Communal Activities for Change:

- Co-constructing teaching and learning in relationships.
- Group work and collaborating (recognised as real life skill).
- Dialogue – between people, disciplines, creativity and identity, and ideas; acknowledging embodiment and difference and allowing for conflict and irreconcilable difference.

Problem Solving

- Using real problems to motivate and engage learners.
- Transdisciplinarity – responding to real-world problems by integrating different ways of thinking, including knowing that (propositional knowledge), knowing how (practical knowledge) and knowing this (aesthetic or felt knowledge).

Ethics and Trusteeship:

- Learners and teachers consider the ethics of their creative processes and products.
- They are guided in their decision-making by what matters to them as a community, acting as 'trustees' of that decision-making and its outcomes.

Professional Wisdom:

- Teacher creativity – as background presence, model and source of authenticity, or strong force, underpinning both teaching creatively and teaching for creativity.
- Common educational tensions and dilemmas of accountability/assessment, marketisation and resource/time pressures are acknowledged and navigated creatively.

Data Analysis Related to RQ3 Showed that:

Teaching for creativity can be grounded in this creative pedagogies synthesis as a starting point for understanding the teacher/student creative relationship in Year 2.

What we know about how teaching for creativity is currently understood in the partnership: teaching for creativity is perceived by many to be taught through the arts subjects. Additional subjects such as technology, English and PE were also often cited, where they could explore creativity using their imagination, innovating and thinking creatively to solve problems. It was felt that both strong subject knowledge and skills are required for creative thinking to occur. The industry and creative partners championed creativity beyond the arts and suggested that examples of creativity in action would be useful outside of traditionally creative subjects.

How is teaching for creativity currently implemented: Staff and senior leader responses highlighted the challenges around the current implementation of teaching for creativity. Teacher time, budgets and teachers' skills were identified as recurring barriers. Students were able to articulate the pedagogies used across their schools, including for example exploring possibilities and solving problems in maths.

Senior leaders and staff identified key structures and approaches for developing teaching and learning within which creativity might be facilitated: National Curriculum based; focused on deep learning; distributed leadership structures; curriculum maps and pathways; primary level topic-based curriculum; communality of approach across key stages; developing practice through in-school training days, day-to-day learning and resources; using staff meetings, INSET days, governors' meetings and CPD across Multi-Academy Trusts.

Penryn Partnership colleagues shared the following steps to best prepare teachers: continued sharing of existing best practice; exploring together a shared creativity definition, securing a language for learning leading to a clarity around the teaching for creativity in schools; sharing resources and sharing research; including senior leaders in action research to deepen understanding through a research-informed approach before sharing and building into whole school CPD offer.

An aspiration is to develop a matching pedagogies framework to complement the skills progression outlined in the 'Preparing for a Creative Future Draft Framework' above.

Implications

The most important implications from across the report are:

- The team are confident in Year 2 to apply the combined logic of the literature review and data analysis to underpin the refined creative skills framework and to use the creative pedagogies synthesis as a starting point for the Action Research.
- Awareness was lacking around the importance of creative skills for the climate crisis and wellbeing, areas which could be developed across the CC:PP.
- Creative skills for innovation and growth in science, technology, engineering, small businesses and the creative industries are worthy of further attention.
- Expanding the understanding of creativity as relating to learning across the curriculum is an issue for the project to address.
- It is helpful to note staff and senior leaders' awareness of the barriers to creativity; and their insights into existing supportive structures for Action Research development in year 2, and the Ensuing embedding and growing of its outcomes in year 3.
- In writing the report it became apparent that it would be helpful to understand Penryn College alumni's progression routes post 16 and further education.

Introduction

Creativity Collaboratives is a national pilot programme of eight clusters of schools across England who are working together to test innovative practices in teaching for creativity, sharing learning to facilitate system-wide change. The programme is funded by Arts Council England with the generous support of Freelands Foundation, and launched in October 2021. Creativity Collaboratives: Penryn Partnership forms one of the pilot programmes, and over the course of three years is focussed on exploring the central question:

> *"Does teaching creativity across the curriculum lead to young people who are better prepared for their future in a changing workforce?"*

This document reports on the research and findings from year 1 of the Creativity Collaboratives programme in Penryn.

Creativity Collaboratives: Penryn Partnership

Creativity Collaboratives in Penryn is led by Penryn College, an 11-16 school on the south Cornish coast, and incorporates the existing Penryn Partnership, a Creativity Network that comprises a group of industry and cultural partners, and the research partner, the University of Exeter.

The **Penryn Partnership** is a long-established collaboration between 8 primary schools and its feeder secondary school. Established almost 20 years ago, it is built on a vision that children from 4-16 years old will have a breadth of experiences across curricula which will enable them to be creative, resilient, independent learners with a thirst for knowledge and exploration. Alongside Penryn College the partnership includes Penryn Primary Academy, Constantine Primary School, Flushing C. of E. School, Mabe Primary School, Mawnan C. of E. Primary School, Mylor Bridge Community Primary School, Perran-ar-worthal CP School and Kennall Vale School and also includes two Area Resource Base [ARB] units for Special Educational Needs and Disabilities [SEND] provision in Penryn College and Penryn Primary Academy.

The **Creativity Network** comprises representatives from local industries, including the cultural industries. It includes Allen and Heath, A&P, Cornish Lithium, Hall for Cornwall, KEAP (Kernow Education Arts Partnership), Pendennis, Real Ideas Organisation, The Writers Block and Watson Marlow – Fluid Technology Group. The involvement of the Creativity Network has been designed to keep the Creativity Collaborative in Penryn focused on understanding what skills schools need to help their students be better prepared for the changing workforce. For clarity during discussion of the findings in this report, members of the Creativity Network are collectively referred to as 'industry and cultural partners'.

The Research

In Year 1 we set out to 'Question, Challenge and Explore', working towards creating a 'Preparing for a Creative Future' framework. Through explorative research across our Penryn Partnership and Creativity Network, we addressed three questions:

RQ1. Why are creative skills needed in a changing workforce?
RQ2. What creative skills are needed to be developed by Cornish students to become better prepared?
RQ3. How do we best prepare teachers for teaching for creativity?

Research included a literature review, focus groups, interviews and participants also took part in a Creativity Collaboratives baseline survey developed by Durham University. The project during year 1 also included an initial continuing professional day [CPD] day for teachers, and the launch of the Action Research Project that will form the focus of year 2.

The Report

This is structured in three parts:

Part One
Presents the research and findings relating to research questions 1 & 2, including the literature review, findings from a thematic analysis of the data, and concluding with a **Penryn Creative Skills Framework** plus a **draft 'Preparing for a Creative Future' framework**. This has been designed to map the development of creative skills from Reception through to Key Stage 4 and is presented here in its early stages of development as it stands at the end of year 1.

Part Two
Presents the research and findings relating to research question 3, including a creative pedagogies synthesis, and summarised findings from survey data and headteacher meetings.

Part Three
Reports on CPD that has been delivered in year 1.

Methodology

The following research methods were used to explore our three research questions:

Research Questions	Methods
RQ1. Why are creative skills needed in a changing workforce?	• Literature review.
RQ2. What creative skills are needed to be developed by Cornish students to become better prepared?	• Focus groups with students, staff and industry and cultural partners network. • Post-16 destinations data. • Industry and cultural partners survey.
RQ3. How do we best prepare teachers for teaching for creativity?	• Meeting notes from Teaching and Learning meetings with headteachers and from a staff training day. • Synthesis of two existing creative pedagogies frameworks. • Baseline survey administered by Durham University. • ARB survey conducted with students in small focus groups. • Industry and cultural partners survey.

Details of each method is as follows:

Literature Review

A focussed literature review was conducted in relation to RQ1 and RQ2, encompassing keyword searches of academic databases (Education Research Complete, ERIC and British Education Index) and follow-up searches using Google Scholar. The expertise of the research team and project partners was drawn on to access industry-based reports from both business and educational sectors. Additional Google searches were used to locate industry, labour market and local government data relating specifically to Cornwall.

A separate synthesis of two existing creative pedagogies frameworks was conducted for RQ3, and this is presented in Part 2 of the report.

Focus Groups

Eight focus groups were conducted, each with 5-6 participants, including primary and secondary staff, students from key stage 2, key stage 3 and key stage 4, and with local industry and cultural partners. Focus group discussions comprised semi-structured interview questions, free discussion, drawing activities and ranking and annotation of the pre-prepared 'creative skills framework' based on the framework as it appears in the literature review.

Post-16 Destinations Data

Anonymised data showing destinations of students at 16+ was provided by Penryn College.

Teaching and Learning Meetings with Headteachers

Teaching and Learning [T&L] meetings between the Creativity Collaboratives Penryn Partnership lead and headteachers across all participating schools took place as part of the wider development of the project in Penryn. These provided crucial information in understanding how pedagogy is developed across a school and across the partnership. Meeting notes, a learning walk around each school, information from each school's website, and notes from a staff training day have therefore been used to build a strong understanding of curriculum structure and detail in response to RQ3.

Durham Survey Data

A baseline survey was developed by Durham University and administered across the eight national Creativity Collaborative pilots. The survey was designed to measure the overall impact of the Creativity Collaboratives programme. It provided quantitative data on participants' experiences of learning and teaching creatively, operationalised according to the Durham Commission definition of creativity, and perceived levels of school support for this. We have used this data to provide insight into our third research question: how do we best prepare teachers for teaching for creativity?

The data was provided to the Penryn Partnership in anonymised form with descriptive statistics extracted for the Penryn Partnership only. This included 432 responses from primary students at 8 schools, 449 responses from secondary students at 1 school, 91 responses from teachers at 9 schools, and 10 responses from senior leaders. Survey data has been synthesised into short summaries, included in Part 2 of the report.

Penryn Surveys

- A selection of questions from the Durham survey were used as the basis for a short focus group with students from the ARBs [Area Resource Bases] so that responses could also be gathered from this group who were not able to access the written surveys.

- A revised version of the Durham Survey was developed for the industry and cultural partners network, and collected both qualitative and quantitative data covering the same topics as the main Durham Survey. A summary of responses is provided in our discussion of RQ3 alongside the other surveys, and the qualitative data has been built into the thematic analysis presented in response to RQ1 & 2.

Analysis

Data and Analysis RQ1 & 2

Data included transcriptions of the focus group discussions, qualitative responses to the industry partners survey and post-16 ARB destinations data.

A Thematic Analysis was Conducted:
An initial thematic structure was drafted based on the literature and guided by the first two research questions. Emergent themes relating to the research question were also noted during initial coding by members of the research team. Following initial coding, categories were developed which combined codes from the initial thematic structure with emergent codes, and discussion between the research team helped to define categories and to produce and refine themes. Findings are presented in response to each research question in relation to this refined thematic structure.

Data and Analysis RQ3

Data included meeting notes and website text from participating schools, quantitative data from the Durham surveys and from the and Industry surveys.

Information from the surveys has been synthesised into short summaries which appear in this report. **Headteacher meeting notes have also been summarised** under three headings, providing understanding of how T&L is currently developed across the Penryn Partnership, what this looks like in the classroom, and how new pedagogy is currently developed in the partnership.

Brief findings are presented in relation to this synthesis of the data.

Ethics

Ethical permission for primary data collection was gained from the University of Exeter Ethics Committee. Participation was voluntary and all data has been anonymised. Anonymised secondary data has been shared according to the partnership agreement with Arts Council England, with ethical permission from the University of Durham.

Part One: Research and Findings for Research Questions 1 & 2

In this section of the report, we present a literature review and the results of a thematic analysis of the data which responds to our first two research questions:

RQ1 Why are creative skills needed in a changing workforce?
RQ2 What creative skills are needed to be developed by Cornish students to become better prepared?

Findings are summarised in response to each research question in turn. This part of the report will conclude firstly with the presentation of the Penryn Creative Skills Framework that has been developed in response to the research in year 1, building on the literature and the contributions of all of the participants. Finally, we include the draft 'Preparing for a Creative Future' framework, based on the skills framework, which is being designed to map the development of creative skills from Reception through to Key Stage 4. It is presented here in its early stages of development as it stands at the end of year 1.

Literature Review

'Employers increasingly cite 'creativity' as one of the qualities they seek in recruiting staff. Creativity will be a key capacity for children and young people if they are to meet the challenges of the future.' (Durham Commission, 2019, p. 28)

The Durham Commission (2019[1]), clearly articulates the need for creativity in the workforce of the future, not only within the creative industries but in relation to a much wider concern with both national economic growth and international calls for young people to be resilient to the demands of a rapidly changing society. This review summarises understandings from both the academic literature and within industry reports of the changing nature of the workforce, the skills that are needed for this changing workforce, and the value of creativity in particular as a skill in this context. The Cornish context is considered, and the second half of the review focusses on articulating an understanding of creative skills as a starting point for development and exploration in the Penryn context. The literature review responds specifically to the first two research questions for year 1:

- **RQ1** Why are creative skills needed in a changing workforce?
- **RQ2** What creative skills are needed to be developed by Cornish Students to become better prepared?

An Uncertain Future

The 21st century is widely characterized by uncertainty and change in interconnected social, political, environmental, technological and economic domains. Commentators from the Creativity Industries Federation & Nesta (2018) to the Institute for the Future (2020), Pearson and Nesta (Bakhshi, Downing, Osborne & Schnider, 2017), the Organisation for Economic Co-operation and Development [OECD] (2018), the National Foundation for Education Research [NFER] (Taylor, Nelson, Davies & Hillary, 2022) and Price Waterhouse Coopers [PWC] (2018) all comment on a similar set of drivers of change, which include:

- Climate crisis, including an urgent need to address and adapt to the depletion of natural resources and rising sea levels. An emerging 'green economy' impacts the workplace, as does the drive to transition to net zero by 2050 (Taylor et al., 2022) and to 'engage with the natural world, to appreciate its fragility, complexity and value'. (OECD, 2018, p. 5)

- Innovations in science and technology which are changing the nature of every part of our lives, communications and workplaces. Automation and artificial intelligence are impacting human tasks and jobs, greater connectivity is changing the nature of production, whilst new technologies are also giving rise to entirely new occupations and sectors (Bakhshi et al., 2017), with opportunities for creative entrepreneurs both within and beyond the creative industries. (Creative Industries Federation & Nesta, 2018)

- Global connectivity is leading to increasingly integrated global labour markets, increased financial interdependence, but also increased uncertainty and exposure to economic risk and crises (OECD, 2018). In the UK, the recent departure from the European Union has introduced an additional layer of uncertainty in this domain, expected to play out over the next ten years and beyond. (NFER, 2022)

[1] a collaboration between Arts Council England and Durham University that aims to identify ways in which creativity, and specifically creative thinking, can play a larger part in the lives of young people from birth to the age of 19, both within and beyond the current education system.

- Changes in the size, distribution and age profile of the world population are changing the nature of careers and the way people arrange their lives. Increasing longevity, urbanisation, a growing global population and increasing migration are all leading to increasing social and cultural diversity and different working patterns. Alongside these changes, in many parts of the world there is increasing inequality in living standards and life chances, which together with conflict and instability are further entwined with political uncertainty and an erosion of trust in government. (PWC, 2018)

In this context of complex and ongoing change, PWC (2018) describes it as 'impossible to predict exactly the skills that will be needed' (p. 31) in the future, but emphasizes the pressing need for both workers and organisations to be ready to continuously adapt.

What skills are needed for a changing workforce?

A number of industry and policy analyses have been conducted to identify the skills likely to be needed to successfully address this context of uncertain and ongoing change in the workplace and beyond. The following brief synthesis combines the predictions of a selection of these reports as follows: the NFER Skills Imperative 2035 report (Taylor et al., 2022), the Nesta-Pearson Future of Skills report (Bakhshi et al., 2017), Price Waterhouse Cooper Workforce of the Future report (PWC, 2018), the OECD Future of Education and Skills report (2018), the Institute for the Future Future Work Skills report (2020), and the World Economic Forum [WEF] Future of Jobs (2018) UK analysis.

Our synthesis has followed the skills groupings outlined in the OECD Learning Framework 2030 (OECD, 2018):

- Cognitive and Metacognitive: this was the most dominant clustering of skills, and the area in which creativity as a nominated skill featured highly, alongside related skills including imagination, innovation, originality, problem-solving, initiative, critical thinking, analysis, novel and adaptive thinking. Other skills called for in this area include learning skills (appeared across all analyses), reasoning, systems skills, fluency of ideas, cognitive load management and analytical thinking.

- Social and Emotional: the second largest clustering of skills revolved around emotional and social intelligence, including interpersonal skills, perceptiveness and empathy, collaboration, co-operation, cross-cultural competency and leadership. Self-efficacy, resilience and adaptability also appear here.

- Physical and Practical: combining design skills with ICT skills, including technology design, new media literacy and computational thinking. Transdisciplinarity was mentioned widely in analyses, but not always as a discrete 'skill' – for example the OECD (2018) analysis recommends paying attention to the 'transferability' of skills from one context to another, and the 'inter-relation' of different topics within and across disciplines, and with real life.

Whilst creativity itself features highly in the list of skills needed for a changing workforce, we can also draw on this analysis to begin to shape the nature of the creative skills that will be needed. Creativity is conceived as much around problem solving and adaptive thinking as it is around imagination and novelty. It takes place in a context of collaboration, where interpersonal skills, diversity and empathy are valued. It is integrated with developing technologies and an emphasis on transdisciplinarity which values both discipline specific knowledge and the ability to think across the boundaries of disciplines.

Why is Creativity Needed?

Arguments from the Durham Commission report are synthesized with perspectives from the related literature to demonstrate why creativity features so highly in the skills demanded for the future workforce:

Creativity and the Economy

The analysis above shows that industry is widely calling for creative skills from their workforce of the future. These creative skills are framed in the following terms:

- **Creativity for change:**
  Since change is being seen not only as a transitional state but as an ongoing condition of the workplace (Lee, 2012), creativity is considered on an international basis as an essential skill to facilitate flexibility and adaptability in the workforce (as seen in research from Europe, America, Australia and Africa: Ab Kadir 2017; Agbowuro, Saidu & Jimwan, 2017; Alismail & McGuire, 2015; Cobo, 2013).

- **Creativity for a knowledge-based economy:**
  Cobo (2013) notes that the transition from jobs requiring manual and routine cognitive skills to those requiring problem-solving and communications skills has been ongoing for some decades already. Knowledge alone will not suffice for success in this environment however; Corbisiero-Drakos, Reeder, Ricciardi, Zacharia and Harnett (2021) note that creativity is key to applying that knowledge to problem solving in context.

- **Creativity for economic growth:**
  Creativity is seen as a core skill for creating new economic opportunities, and for generating new ideas and products (Cobo 2012, Lee 2012). Alongside risk-taking and innovation, creativity is seen as a feature of the entrepreneurship needed for competing in a global market (Sahlberg & Oldroyd, 2010), and in particular for engaging differently in that global market so that economic flourishing does not need to be harnessed to the consumption of finite resources. Alternative systems thinking such as the circular economic model (Ellen McArther Foundation, 2022) require innovation and the development of skills in education that can be applied in real world situations.

- **Creativity and technology:**
  The Durham Commission (2019) report highlights how, as new technologies and automation bring change to all forms of employment, 'creativity and the capacity to think creatively will become increasingly important' (p. 37). As routine and manual tasks continue to become automated, the value of nonroutine, creative tasks (Soule & Warrick 2015), and of 'human' skills like creativity (WEF, 2018; Institute for the Future, 2020) are predicted to increase. The World Economic Forum (2018) reminds us that new opportunities will also arise as we consider what the place is of humans alongside machines, and agility and creative adaptability will also be needed to respond to this question.

- **Creativity and the creative industries:**
  Tambling (2016), reminds us that the creative sector is the fastest growing in the UK, and Taylor et al. (2022) shows 'culture' as a predicted growth area for employment. Ashton (2015) highlights the creative skills that are needed for work within this sector, not only to fulfill the specialist skills in the arts, design, and 'creative' roles, but also to manage the 'portfolio working' which characterizes these industries together with a multiplicity of career pathways and high competition to enter the industry.

Creativity for the future workforce beyond economic growth

Globalisation, ecological destruction and climate change compel us to consider the value of creativity for the future beyond its economic utility for globalized capitalism, as well as encouraging innovative consideration of different economic models. Craft (2012) urges us to value both creativity and wisdom as we educate young people to develop 'thoughtful, responsible and sustainable possible futures for themselves and others' (p. 184). Considering the workforce of tomorrow encompasses not only concerns with economic prosperity, but also with skills for active citizenship, tolerance, social responsibility and accountability – areas in which creative skills also have a part to play (Sahlberg & Oldroyd, 2010; Brown, 2019; Lee, 2012). Two areas which call particularly for creative skills are:

- **Creativity and sustainability:** Sahlberg and Oldroyd (2010) highlight that despite the apparent conflict between education for economic growth and education for sustainability, both are intertwined and also share pedagogical priorities, including a concern for creativity: 'sustainable development requires an understanding of the complexity of the global ecosystem and of creative problem-solving to find solutions to 'wicked problems' … such as that of reconciling economic activity with a sustainable environment' (p. 280). Soule and Warrick (2015) further highlight the need for creativity as we prepare young people today to face the challenges of developing alternative technologies and green jobs for a sustainable future. Chappell's (2021) Posthumanizing Creativity engages directly with environmental challenge as it conceptualises creativity as emerging from enmeshed humans and others (objects, materials, environments) and thus integrates humans, environment, learning and emergent futures (described in more detail below) in order to decentre humans' influence and create space to better respond to environmental crises.

- **Creativity and wellbeing:** The COVID-19 pandemic has resulted in negative mental health outcomes for people throughout the world (Boden et al., 2021) and young people have been shown to be the group most vulnerable to suffering low mental wellbeing (Owens et al. 2022). This has highlighted the need to attend to the wellbeing of both students and workers both now and in the future. Research in the context of the pandemic has consolidated the link between creativity and wellbeing (Kiernan, Davidson & Oades 2020). For example, Tang, Hofreiter, Reiter-Palmon, Bai & Murugavel (2021) found a higher level of wellbeing for those engaged in creative processes during the pandemic amongst workers. This follows the Durham Commission's (2019) findings that creativity has a vital part to play in shaping a 'holistic, life-long approach to health and wellbeing' (p. 39) which may apply within and beyond the workforce.

The Cornish Context

The largest industry sector in Cornwall is agriculture, forestry and fishing, which is well above the UK average, followed by construction, and then professional, scientific and technical industries (Cornwall Business Observatory, 2020). Cornwall as a whole was shown to have a higher proportion of businesses with a low turnover (less than £50,000) than the UK as a whole, and fewer businesses with a turnover of £1m or more (Cornwall Business Observatory, 2020). The Economic Growth Service for Cornwall Council (2021) assessed the current skills shortages in Cornwall in 2021 to be in customer services (33% of vacancies), followed by teaching (23%), people management (18%), sales (17%) and IT (16%). 17.2% of these vacancies were in roles considered at high risk of being automated, whilst the nomis (2021) labour market profile for Cornwall showed that earnings in the county were well below the national average. This was reinforced by the English Indices of Deprivation 2019 (Ministry of Housing, Communities and Local Government, 2019) which showed that Cornwall was in the most deprived decile for both the income and employment scales for England.

The Cornwall Business Observatory (2019) also notes that Cornwall is host to over 4,800 of the 1.4 million Creative Industries jobs in the UK. In 2019, data showed that creative industries in CIOS (Cornwall and the Isles of Scilly) was a 'diverse sector that includes companies that work in IT and software development to performing arts, marketing and architecture … with the county being one of the fastest growing creative areas outside of London' (Cornwall and IOS Local Enterprise Partnership, 2019). The Cornwall Business Observatory (2019) notes the wide diversity of creative talent in Cornwall with its long heritage in the arts including Falmouth University (previously Falmouth College of Arts). The Creative Industries are seen as a potential growth area for the UK as a whole (Bazalgette, 2017) as a means to underpin future prosperity, develop new technology, capitalise on intellectual property rights and growing talent pipelines, with the possibility of generating approximately one million new jobs by 2030.

A Summary of Perspectives from the Literature on why Creative Skills are needed in a Changing Workforce

So why are creative skills needed in a changing workforce? Across these literature and policy reports we see strong arguments which include: a need to better be able to collectively and professionally respond to 'wicked problems' such as the climate crisis; to accommodate science and technology innovations which are changing the nature of jobs, creating new entrepreneurial opportunities; to respond to a new kind of global interconnectivity; and diversification of career type and lifestyle choice. Creative skills are seen as nested within a suite of '21st century skills' defined through the cognitive and metacognitive, social and emotional, and physical and practical. Creativity is also characterized by collaboration, diversity, empathy, integration with technology and transdisciplinarity. Further logics for creativity for the future workforce include connections to economic success and growth; a means to develop beyond a knowledge-based economy; a means to capitalize on technology's potential; and as a vital characteristic of the creative industries, a potential growth area for the future.

All of these logics should and can be critiqued in the context of young people's teaching and learning within the Penryn Creativity Collaborative. This can be achieved by considering creativity's relationship with sustainability and wellbeing, explicitly within the Cornish context. The creative skills that are needed by Cornish students are dependent on an open and critical interrogation of the relevance of these rationales for Cornish young people's future lives and work choices, with potential growth areas in the region identified as customer services, teaching, people management, sales, IT and the creative industries. With creativity an inherently change-based process, there is potential here to allow young people to respond to workforce need through acquiring creative skills, but also have the ambition to contribute to shaping Cornwall's creative and entrepreneurial workforce of the future.

Defining Creative Skills

A key term for this enquiry is 'creative skills'. Despite a wealth of interest in nurturing creativity in educational policy, practice and research (NACCCE, 1999; Neelands et al. 2015; Durham Commission, 2019; OECD 2019), research has shown that teachers often find it hard to describe examples of their students using or developing their creative skills, 'based on a general lack of understanding as what constitute[s] being creative in a range of domains' (Davies, Newton & Newton, 2018, p. 884). Mullet, Willerson, Lamb and Kettler's (2016) review of the literature found that teachers often struggled to define creativity or to recognize it in students, also that there was often a difference between teacher and researcher definitions and conceptions of creativity. Jules and Sundberg (2018) found that within international assessment frameworks, there is also a 'divergence in the way the competence [creativity] is discussed, which may account for the lack of acknowledgement as a key skill in preparing students for employment in the knowledge-based economy.' (p. 35). Taylor et al. (2022) conducted a review of essential employment skills needed for 2035 and the role of educators in helping prepare young people for the future labour market, and found that a key recommendation from the literature was to build 'clarity around skills definitions and pedagogies' (p. 9). We have therefore identified producing a definition of creative skills as a priority in responding to our research questions, and address that firstly through the literature here.

Banaji, Burn and Buckingham's (2010) literature review of the 'rhetorics of creativity' is helpful here, reminding us of the diversity of conceptualisations of creativity that are present within education, research, and common discourse. They map traditional views of the individualised 'creative genius' (p. 15) and contrast these with explicitly anti-elitist democratic and political views of creativity, an idea of an 'ubiquitous' creativity which draws on Craft's (2000) notion of 'little c', or everyday creativity which is accessible to everyone in responding flexibly to the challenges of day to day life, and rhetorics of creativity as a social good, linking to notions of empowerment and social justice. They describe the view of creativity as an economic imperative linked closely to skills for future employment, conceptualisations of creativity as linked closely with play, and cognitive views of creativity that could be linked to the conception of creativity as a 'thinking skill' or 'habit of mind' (Lucas, 2016). Finally, they address the creative affordances of technology and a more practice-based focus on the 'creative classroom' (p. 63).

Mullet et al. (2016) found that there was a widespread view amongst teachers that creative skills were associated primarily with arts subjects. We will adopt the contrasting view which is that creative skills are relevant to all areas of the curriculum, and beyond that in all areas of daily life. This is the view of creativity presented in both the influential National Advisory Committee on Creative and Cultural Education [NACCCE] (1999) report and Durham Commission (2019) report.

NACCCE[2] (1999), defined creativity as:

> *'Imaginative activity fashioned so as to produce outcomes that are both original and of value' (p. 30),*

This is underpinned by four primary concepts about creativity which is that it involves using imagination, pursuing purposes, being original (in individual, relative, or historic terms), and having value.

The Durham Commission (2019) definition has a slightly different emphasis, describing creativity as,

> *'The capacity to imagine, conceive, express, or make something that was not there before' (p. 2).*

Whilst these definitions have in common themes of imagination, newness, and of producing something purposeful, the Durham definition also has an emphasis on a multi-domain conceptualisation of creative thinking, drawing in particular on Lucas's (2016) definitions of 'Creative Habits of Mind'.

In order to produce a shared understanding of Creative Skills for the Penryn Partnership, we have synthesised these understandings of creativity together with some other key theories of creativity, so as to produce a framework for understanding creative skills. The key materials we have drawn on for this synthesis are:

Possibility Thinking is a term coined by Craft (1999), which focusses on an everyday, or 'little c' notion of creativity and rests on two key ways of thinking. The first can be encapsulated by asking the simple question 'what if', thus moving from what is to what might be, or making the shift from 'what is this and what does it do?' to 'what can I do with this' (Chappell et al., 2008). The second is 'as if' thinking, or 'taking on another's perspective' (Craft & Chappell, 2016, p. 407). The theory was developed through a series of empirical studies across early years and primary school settings (Craft, Cremin, Burnard, Dragovic & Chappell, 2013) and was articulated as a series of 'features' which were developed over time, but included: question posing and responding, risk-taking and being imaginative, self-determination and action-intention (taking intentional action), immersion and play, with innovation seen as both part of the process as well as a result of it (Craft, Cremin, Burnard, Dragovic and Chappell, 2013).

Wise Humanising Creativity [WHC] and Post Humanising Creativity [PHC], both of which emphasise embodied, ethical and dialogic aspects of creativity, drawing a close connection between creativity and identity through the concept of 'making and being made' (Chappell, Pender, Swinford & Ford, 2016). This is the concept that creativity is a 'journey of becoming' (Chappell, 2011), since it involves a dialogue between ideas and the self (the inside) and developing artistic ideas with others (the outside), together with ethical consideration of the impact of our creative products (Chappell et al., 2017). WHC emphasises a humanising, collaborative and communal understanding of creativity, deliberately resisting individualised, marketized, universalised and performative accounts which are more dominant elsewhere. WHC has been developed in a variety of contexts, including secondary dance, early years, science and virtual learning environments (Slade & Chappell, 2017; Chappell et al., 2017; Chappell et al., 2016), and includes the features of making and being made; taking and sharing control, new ideas that matter, working on own and with others, and being immersed in creating (Chappell et al. 2016).

[2] The National Advisory Committee on Creative and Cultural Education, chaired by Ken Robinson, was established by the Department for Education and Employment and Department for Culture, Media and Sport and put the case for a national strategy for creative and cultural education. Its recommendations led to the development of Creative Partnerships, an influential government funded schools partnership programme which ran from 2002-2011.

Posthumanising creativity develops this theory into the posthuman or new materialist field of thought (for example, Barad, 2003; Braidotti, 2013) which de-centres the human, seeing objects and environments as equal 'actants' in an enmeshed creative endeavour. PHC extends the concept of embodied dialogue which is at the heart of WHC to incorporate both human and other-than-human bodies (Chappell, 2018). Chappell (2018) argues for the potential of this new conceptualisation to engage ethically with the rapid changes that we face in the 21st century including challenges of educational policy and practice, technological integration and questions of environmental sustainability.

The Five Dimensional Model of Creativity developed by the Centre for Real-World Learning at the University of Winchester (Lucas, Claxton & Spencer, 2013; Lucas, 2016) has been influential in the Durham Report (2019) and development of the Creativity Collaboratives project. It draws on the idea from the cognitive sciences of creative 'habits of mind' (Claxton et al., 2006). As with the other models of creativity described here, Lucas (2016) views creativity as learnable, and this model has therefore been integrated with a consideration of how the development of creativity can be assessed in schools (Lucas, Claxton & Spencer, 2013), and the impact of this can be seen, for example, in the progression mapped within the Australian Curriculum (see below). The Five Dimensional Model comprises five core 'creative habits' which are: Inquisitive, imaginative, persistent, collaborative and disciplined (Lucas, 2016).

The Australian Curriculum (Australian Curriculum, Assessment and Reporting Authority, 2014) is unusual in both emphasizing and assessing students' progression in creativity as part of a series of seven general capabilities that are mapped across the different learning areas of the curriculum. Here it is linked with, but also distinguished from critical thinking, using the definition 'Creative thinking involves students learning to generate and apply new ideas in specific contexts, seeing existing situations in a new way, identifying alternative explanations, and seeing or making new links that generate a positive outcome' (Australian Curriculum, Assessment and Reporting Authority, 2014). Critical and Creative thinking together are mapped into a series of four general capabilities which are: reflection on thinking and processes; inquiring – identifying exploring and organising information and ideas; generating ideas, possibilities and actions; and analysing, synthesising and evaluating reasoning and procedures. The UK Qualifications and Curriculum Authority [QCA] (2005) similarly produced a framework for identifying and documenting progression in pupil's creativity which bears some similarity to the more current Australian framework, bridging skills in both creativity and criticality. The QCA Framework comprised a set of five 'behaviours' that could evidence creativity: asking questions; making connections; imagining; exploration; and critical reflection (as summarised in Craft, Burnard, Grainger and Chappell, 2006).

Towards a Penryn Partnership Model of Creative Skills

The following model has been produced by analysing the literature reviewed above and synthesizing the material into a series of five themes which, like the Five Dimensional Model, Australian Curriculum and QCA models, can be mapped to capabilities, behaviours or skills that can be evidenced and may be used as the starting point for considering progression across different age groups and /or levels. The model retains an ethical dimension which has previously been foregrounded most in Wise Humanising / Post Humanising Creativity, and links here to the focus within the Penryn Partnership on future skills, particularly considering issues of sustainability and citizenship when considering the future workforce. As in later iterations of WHC (Walsh, Chappell & Craft, 2017) the link between creativity, identity and embodiment are threaded through the themes rather than appearing as a separate area to be assessed.

The five parts of our proposed model of creative skills are as follows:

Dialogue and Collaboration

Drawing in notions of dialogue, questioning, and collaborating in both individual and communal endeavours, features of this skill are:

- *Posing and responding to questions (both verbal and non-verbal).*
- *Working individually, collaboratively and communally.*
- *Negotiating conflict and different ideas.*

Honing and Developing an Idea

This combines the skills needed to develop creative ideas, incorporating aspects of self-reflection together with development of technique and understanding the rules of the specific context for the creative action, and the persistence needed to progress creative ideas and actions. Features of this skill are:

- ***Reflection** – analysing, evaluating and considering alternatives.*
- ***Discipline** – understanding the rules and consequences of different kinds of creative action, developing the techniques needed to progress, crafting and improving work.*
- ***Persistence** – sticking with difficulty and tolerating the unknown.*

Empowered Action

Foregrounding pupils' own agency in creative action, as a skill this includes the ability to take risks and question accepted ideas, which we see as being interrelated both with the capacity to be immersed in the 'flow' of creative process (something that has been described in detail by Csikszentmihalyi (1996)) and with the ability to take action – i.e. to act on creative ideas. Features of this skill are:

- ***Risk taking** – challenging assumptions, delivering surprising ideas.*
- ***Immersion** – being immersed in activity and focusing, concentrating.*
- ***Taking action** – being self-determined in putting ideas into action.*

Being Imaginative and Playful

This is the ability to utilise imagination, to improvise playfully, and to generate and try out possibilities: as with possibility thinking, it is the ability to go beyond an understanding of 'what is' to consider instead 'what might be'. Features of this skill are:

- ***Playfulness** – improvising, trying things out, being open-ended.*
- ***Imagination** – 'as if' thinking, or considering different perspectives.*
- ***Considering possibilities** – going beyond what is, to what might be.*

Generating New Ideas that Matter

This includes the ability to combine innovation with critical attention to the consequences of ideas, considering the ethical impact of creative actions and responding appropriately to others' ideas, understanding diverse values. Features of this skill are:

- ***Innovation** – exploring/generating ideas that are new (to the student).*
- *Considering the consequences of creative ideas and actions.*
- *Responding appropriately to others' ideas.*

Findings for RQ1

Why are creative skills needed in a changing workforce?

The data for RQ1 was analysed in relation to a thematic structure that was developed in response to the literature review, thus allowing us to relate the findings in the local context to a bigger picture. The findings therefore begin with discussion of the specific considerations for **creative skills for a Cornish workforce**. The wider context of the needs of the workforce are discussed under the themes: **creativity for change, creativity and wellbeing, creativity and sustainability**, and **creativity and collaboration**. An emergent theme within the data was **creativity and communication**, also discussed in this section. The needs of specific parts of the workforce are then discussed within the themes: **creativity and the knowledge-based economy, creativity and innovations in science and technology**, and **creativity and the creative industries**. Themes that did not emerge are also notable: global interconnectivity was not discussed, nor was diversity or the diversification of the workforce; wellbeing, which is discussed below, was only mentioned by one child. This may suggest that these issues are not on the agenda for the Penryn Partnership participants, or that they are not associated for them with creativity at the moment. Outcomes such as this will form part of ongoing debate within the partnership into Year 2.

Creative skills for a Cornish Workforce

There was conversation within the industry and cultural partners network about the diversity of opportunities available in Cornwall for young people with creative skills in areas such as engineering, media and marketing. The expansion in independent and small businesses and for internet-based initiatives based locally were also discussed as areas demanding a creative workforce, and creative skills were seen as expanding young people's opportunities in the local context. There were multiple mentions of low aspirations, a lack of knowledge of the diverse industries within Cornwall amongst young people, and a lack of awareness of the 'wider world'. There was specific concern that a prevailing culture of following in parents' footsteps was limiting for aspirations. As reported by one member of the industry and cultural partners network who recalled being surprised when a teacher suggest she apply for university:

> *"I didn't know any other differences that I could do, because that's what everyone in my family did. We worked at Tesco's."* *(industry partner)*

There was also a perception that parents often guide their children and young people towards traditional employment and more conventional, less creative choices (for example, typing rather than engineering for girls) also limiting aspirations for young people in the area.

Creativity for Change

> *"If we are able to be creative we can consider how things can be done, rather than how they always have been."* *(industry partner)*

Industry and cultural partners and teaching staff both commented on the need for creativity to facilitate progress and adaption to an evolving working environment – this was commented on in the context of COVID, in respect of the need to work within a context of reduced resources, and in light of the growth of small industries. Creativity, adaptability and learning were also connected. The unknown nature of the future working environment was referred to:

> *"What matters now won't matter in the future… there'll be new jobs in the next 30 years which haven't been invented yet as well."* *(primary staff)*

Creativity and Wellbeing

Links between creativity and wellbeing are well established in the literature, and particularly in the context of the wellbeing challenges in both education and the workplace in the wake of the COVID pandemic, this may be considered as an important part of the overall response to our research question, why are creative skills needed in a changing workforce? This theme has therefore been maintained although there was only one mention of it, this from a KS2 student who noted:

> *"it's really good for probably mental health and stuff."* *(KS2 student)*

Creativity and Sustainability

Discussion of this theme was primarily amongst industry partners, with only two comments on the topic from secondary teachers. Participants felt that creativity was needed to find 'sustainable solutions', to 'meet environmental sustainability objectives' and to reduce reliance on plastic and on dwindling resources more broadly. One of the industry partners felt that there was a particular need for creativity from young people to 'save our planet' since this is a problem that teachers and world leaders so far don't know how to address.

Creativity and Collaboration

Collaboration, identified in our framework as a creative skill, was widely seen as such in discussions with all participant groups, and identified as a key skill for the future workforce, described by one primary teacher as: **"the way the world is"**. Collaboration was described as part of a diversity of different roles by the industry partners, and in the context of different parts of a business working together. Creative collaboration was seen as a 'human' skill, thus countering the risk of automation, and it was seen as part of the creative learning process needed to drive innovation in industry. Young people envisaged needing to collaborate creatively for a range of jobs in the future, from lifeguard to teacher, stage manager to footballer.

Creativity and Communication

Communication was identified as an emergent theme in the data since it was clear that participants in all groups saw it as a creative skill that would be needed by young people in the future. Amongst the industry partners it was seen in terms of communicating with the public, making a 'human' connection with people, and in people management as well as in the responsive management of different situations as they arose. Student groups saw themselves needing creative communication skills in order to communicate in different ways with people, to adapt **"the way you are with people"** and to communicate with people from different countries.

Creativity and a Knowledge-based Economy

There were a wide range of examples from industry partners of where creativity is needed in 'knowledge based' industries, including in research, education, management, data presentation, business development and in problem solving for technology users. They considered that creativity was needed in order to see things from multiple perspectives, and in order to be able to adapt to customer demand. There were comments about the value of creativity over knowledge with one participant reflecting on this point:

> *"rote learning is largely redundant" (industry partner)*

Creativity and Innovations in Science and Technology

Creativity was seen by all participant groups as central to working in science and technology, and this was considered a creative growth industry in Cornwall and a field in which more skilled workers were needed. Creativity was often seen as 'problem-solving' in this context. Examples of creativity from those working in the industry were problem solving, innovation, creativity for design, for technological advance and change, and in experiments. Innovation in science and technology was seen as drawing together learning from different fields. A scientist describing the value of creativity in their field explained how the creative questioning process was more important for him in this field than the technical skills:

> *"actually, the hard skill is coming up with questions, thinking, 'What's the big idea that's going to push this forward? And it's only once you've identified the question and you've kind of thought, 'Okay, in order to do this, these are the sorts of things we can manipulate,' and then you think, 'Okay, well what's the technique that we're going to use to do that?' So technique comes lower.'" (Industry partner)*

There were a number of comments about the importance of helping students to recognise that science and technology were creative subjects. There were also comments from students that suggested that some at least were already understanding science and technology in this way, for example:

"I said something about computer science and being creative in computer science and problem-solving and stuff like that…, there's not just one way to do it… There's multiple ways you could do things and you have to find the best way." *(KS3 student)*

Creativity and the Creative Industries

Not surprisingly, those working in the creative industries saw creativity as central to their work, and could come up with examples of creative projects. Interestingly there was one comment that despite this,

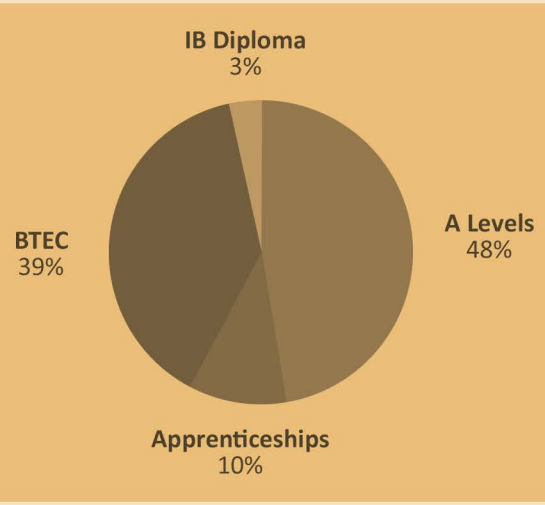
"creativity is not explicitly referenced in documents such as person specs." *(cultural partner)*

Amongst the young people participating it was notable that just over half of them mentioned creative roles when asked where they imagined themselves working in the future, from Youtuber to architect to lighting designer, suggesting that this is an area of aspiration for the participants, which perhaps contrasts with the wider lack of creative aspiration noted by some in the industry and cultural partners network above.

Post 16 Data and Pathways

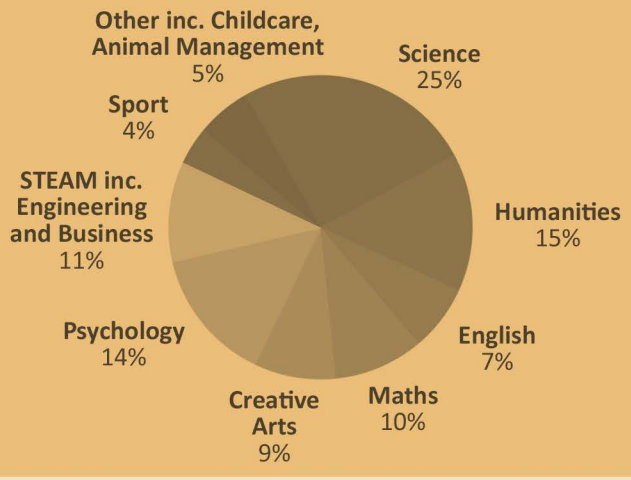
The destinations of Penryn College students at the age of 16 is also relevant to RQ1, 'Why are creative skills needed in a changing workforce?'. As can be seen from the summarised data below, a majority of students remain in education, studying either A Levels, BTEC or IB Diploma, with 10% proceeding to Apprenticeships.

Figure 1:
Penryn College Student Pathways at age 16+, 2021



Across the various range of post-16 courses, common threads of subject areas were;

Figure 2:
Penryn College Subject Pathways at age 16+, 2021



The creative skills required by these post-16 subjects are reflected on further in the data in RQ2, in which Science, English, Maths, Creative Arts, STEAM and Sport were all mentioned directly by research participants.

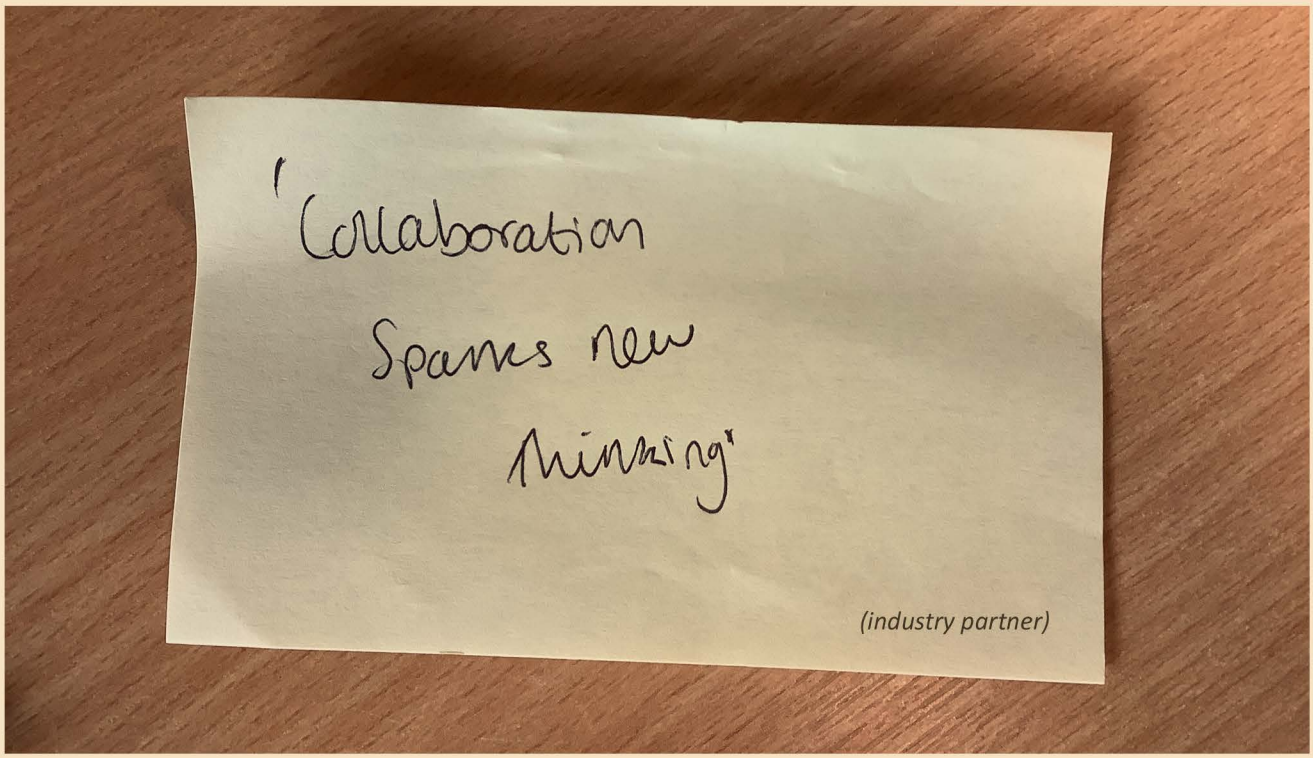
Summary of Findings in Relation to Research Question 1

In summary, the findings in relation to research question 1, why are creative skills needed in a changing workforce, on the whole reflected the existing literature. They demonstrated that creative skills are needed in a time of rapid change in order to facilitate innovation, adaptability and progress in this context. The need for innovation and adaptability in response to the climate crisis and in the context of dwindling resources was noted, there being more discussion of these issues amongst industry partners than from teachers or students.

Collaboration and communication were both seen as essential creative skills for the future relating to a wide range of different roles and industries, and both were seen as particularly 'human' skills that might make workers more resilient in the context of increasing automation. Communication, which is widely agreed in the literature to be one of the essential social and emotional skills needed for the future workforce, was conceptualized here by participants as being part of creativity. Young people in particular described communication in an empathetic sense of needing to communicate responsively with different people. Communication was therefore added to collaboration as part of our findings.

Creativity was considered a priority in a knowledge-based economy where the ability to innovate, communicate, learn and adapt were valued above rote learning of fixed knowledge. There was agreement across all participant groups that creativity was central to science, technology and engineering, fields in which creativity was often conceptualized in terms of problem solving; the creative capacity to ask questions was valued above technical skills, although these were also needed. There was widespread aspiration for working in the creative industries amongst young people, and this was an area in which creative skills were seen as central.

Key considerations amongst participants for the local context were an emphasis on skills for innovation and growth in science, technology, engineering, small businesses and the creative industries. Other local priorities to emerge were the importance of raising and broadening aspirations, raising awareness of the diversity of industries on the doorstep, and of the value of creative skills for opening doors to local industries. Discussion was lacking on the value of creative skills for wellbeing, and on creativity in terms of global interconnectivity and diversity, so this suggests that these are areas in which awareness could be developed across the course of the Creativity Collaboratives programme.



Findings for RQ2

What creative skills are needed to be developed by Cornish students to become better prepared?

The data collected from the focus groups and survey of industry and cultural partners was analysed using the 'Creative Skills Framework' as presented in the literature review as a thematic structure. Since the intention is to refine and develop this framework for the specific community of the Penryn Partnership, this section will conclude with a revised presentation of the framework as a working definition of the creative skills which are needed by Cornish students to become better prepared.

The majority of the comments made by participants related well to the framework, but some data fell into other areas, including:

- Many participants, in particular students, associated creative skills with specific subjects and types of activity, primarily with the arts (38 subject-specific comments linked to the arts, 19 to all other subjects combined). The Penryn Creativity Collaborative will try to broaden this understanding of creativity to encompass learning across the curriculum, so this can be seen as a baseline that has been identified for the project.

- Creativity was often described in terms of problem-solving skills. Closer consideration of this data and of the concept led to a recognition of problem-solving as itself made up of several different interrelated aspects, each of which we found represented across the framework. In particular it was strongly allied to the concept of question posing and question answering, so further discussion of this data will be found in this section.

- Creative skills were often understood in terms of making connections, and whilst this has not been identified as a core part of the definition of creative skills, it can be seen as both context and rationale for developing them. Creativity was seen as contributing to young people connecting to the world around them, to the environment, and to seeing the bigger picture. Creativity was closely connected with transdisciplinarity – expressed by participants as drawing on and applying knowledge and skills from different disciplines – often seen as one of the '21st Century Skills' alongside creativity. Some of this data has also been incorporated below within the theme 'dialogue and collaboration'.

In our framework, we have broken down creative skills into five areas which are discussed in turn in this section: **Dialogue and collaboration**, **Honing and developing an idea**, **Acting with agency**, **Being imaginative and playful** and **Generating new ideas that matter**. In each case, these original titles were presented in simplified language for the students' groups, so both versions of the wording of each theme is included in the theme headings below. This five-part structure has helped us to clearly articulate different aspects of creativity in response to the data, but it is important to recognise that these skills are clearly interrelated and interdependent. This was repeatedly noted by participants, as described here by a primary teacher who saw the skills as a set of cogs:

"…because none of them are more important than the other and they all need to be working together to be able to get that cog to kind of go around." *(primary teacher)*

Dialogue and Collaboration [Working with others]

This theme was widely supported as an important part of creativity, and as an important 'lifeskill' in general. The importance of being able to work with others was discussed, as was the importance of dialogue in the sense of combing ideas, or putting different things together:

"It's all about bringing the things that you have together to make something new" *(KS3 student)*

In this latter sense it was widely discussed by teachers and industry and cultural partners who valued the creative capacity to draw on and apply knowledge / skills from different disciplines, thus making connections by putting ideas, knowledge and skills into dialogue.
Dialogue and collaboration was split into three subthemes: Posing and responding to questions; working individually, collaboratively and communally; and negotiating conflict and different ideas.

Question Posing and Responding

There were limited direct mentions of question posing and responding, although one teacher stated,

> *"You could have questioning as one entire thread" (primary teacher)*

Students asked directly about asking questions understood the question in the sense of having to put your hand up if you were 'stuck' or not understanding something.

However, there were multiple mentions of problem-solving (16 comments) that could be understood as either question posing or question responding, together with one specific comment from an industry partner that 'problem-solving' belonged in this 'question posing/responding' theme. There were several mentions of finding, or understanding a problem, which could be seen as question posing:

> *"So what is the next app? What is the problem with Facebook or whatever it might be? How can you create something that solves that problem?" (secondary teacher)*

And as demonstrated by the same teacher, there were also multiple mentions of responding to a problem or to a situation which could be seen as question answering. Industry partners noted that the ability to identify a problem (question posing) and select a technique (question answering) was a more important skill than the technique itself which could more easily be taught in the workplace. Likewise there were comments about the desirability of this skill in the context of the climate crisis where new questions and answers were needed. There were two comments about 'problem-solving' as something that young people find very hard, and one suggesting it was not a skill well supported in education at the moment, where the emphasis on following 'a set of rules' is not helping to develop 'creative problem-solvers' (industry and cultural partners network participant).

Working Individually, Collaboratively and Communally

There were a lot of mentions of creativity necessitating skills to work both individually and collaboratively. This was linked with 'teams' or 'teamwork' and to listening as a skill that young people needed. There were descriptions from students about the benefits of expanding ideas in dialogue with others, helping each other, inspiring each other, and from a KS2 student who described how creativity couldn't belong to one person but rather had to be 'spread around':

> *"That one person, like, makes everybody creative and stuff. So then everybody spreads it around and then everybody can be happy and funny and fun." (KS2 student)*

It was notable that the word 'communal', or the sense of working within a community did not arise. Since communal endeavour is a significant feature of the Creativity Collaboratives project, the language here needs to be carefully considered to ensure that this aspect of creativity can be recognised by participants moving forward.

Negotiating Conflict

There was discussion of this concept by the industry and cultural partners who described the resilience needed to be able to "be self-critical and take critique as well"; this group also noted the related skill of being able to 'let it go' – to sacrifice ideas when necessary if a better one arises for instance. Students also identified the challenge of conflict when working with others; a teacher described it in terms of understanding others' viewpoints. There was one conversation amongst staff resistant to the idea of 'conflict', preferring 'negotiation' on its own.

Honing and Developing an Idea (Having Skills to Develop your Ideas)

This theme brought together a number of concepts that were widely discussed across all participant groups including needing skills to develop creative ideas, needing to understand the rules of the specific context for the creative action, being able to reflect, and having persistence to progress. This related to the idea of creative skills residing in the process of creativity:

> *"[BTEC allows you to be more creative] … because it's on coursework rather than an exam, and the coursework you're creating something that is…shown and you're creating it in your own creative way." (KS4 student)*

Discipline

Although this word wasn't mentioned, the intended content (understanding the rules and consequences of different kinds of creative action, developing the techniques needed to progress, crafting and improving work) were discussed across all focus groups, perhaps suggesting further consideration of this sub-theme title is needed. There were comments about needing to "understand the basics" (industry/cultural partner) and needing the skills to "create what I want to do" (KS2 student) (6 related comments). This was contradicted by two participants who felt that skills were not needed first for creativity. Having experience and the understanding to "come up with a method" (KS3 student) were both seen as important.

Persistence

Having persistence was seen in relation to resilience (4 comments), to being able to withstand critique (industry/cultural partner) and to being able to follow a process through to an end piece. It was linked to being able to use failure to learn, including thinking of different ways of reaching an outcome, explained here by a KS2 student:

> *"If your… normal design that you've come up with and it didn't go so well, you're going to have to come up with a new idea" (KS2 student)*

Another KS2 student linked persistence to the idea of playing and being imaginative when they commented that:

> *"You can always make something better … playing with it and being imaginative will help it be better" (KS2 student)*

This is another example of the interrelation of different aspects of this framework.

Reflection

Reflection was seen as the ability to evaluate your own and others work, to "spot mistakes" (KS2 teacher) and to think about how you can improve things and make them better. It was connected with the concept of creativity as a 'thinking skill' as seen in a comment from a KS2 student who said that an activity wasn't so creative if "you don't really do much thinking in it", or likewise that creativity "happens in your mind" or is a "state of mind" (all KS2 students). Reflection was also connected with the ability to think on the spot and to create strategies.

Acting with Agency (Doing Things your Own Way)

In focus groups, there was some resistance to the inclusion of 'agency' as a description of this cluster of skills, and queries about the meaning of this term. Taking a definition of agency from the literature on creativity and education, agency may be understood as linked with action through children and young people making their own choices and initiating their own activity (Cremin, Burnard & Craft, 2006) and with empowerment through young people being able to exert autonomy and self-determination (Craft et al., 2013). These ideas come through our data strongly with participants across all groups linking creativity with students' ability to do things their own way, to be themselves and use their own ideas, to have ownership and to lead their own learning, and to have freedom to follow their own interests. It is in this sense that one student described breaktime as a space for creativity:

> *"Well in breaktime we just do whatever we want. Play with stuff, run around with people… 'cause it's not the teachers telling you what to do. It's just you." (KS4 student)*

In the framework, we split 'acting with agency' further into three separate concepts: taking action, risk taking and immersion:

Taking Action

Creative skills were described by participants as something active, contrasted with a passive sense of 'just doing what's expected' (primary teacher). Students often described lessons with practical dimensions as being creative – whether that was doing a science experiment or 'being physical' in drama, art or PE: "you're doing something in that lesson, you're coming up with ideas" (KS3 student). Taking action was also seen as a dimension of creativity which followed on from 'imagination' or 'having an idea' – reinforcing a sense of skills interrelating within a creative process. Comments about the need for confidence in order to put ideas into action showed how this feature is interrelated with the subsequent one, taking risks.

Risk Taking

Teachers, students and industry representatives all commented on 'taking risks' as an important part of creativity – it was one of the larger sub-themes identified with 28 separate mentions. Risk taking was described in terms of it being 'OK to make mistakes' including through experimenting or using a 'trial and error' approach, and engaging in tasks in which there was a feeling of freedom and no right or wrong answer. Staff thought it was important that students had the opportunity to use failure to learn, including learning about their own boundaries. Student confidence or bravery was seen as an important attribute, particularly when doing something different from other people. Discussion within the industry and cultural partners network also linked willingness to take a risk to a sense of ownership over a task. Participating teachers commented on risk taking as something that students found hard, and thought that they should be given more opportunities to take risks within their learning, although some examples were also given of lessons which included these opportunities. The need to create a safe environment and framework for risk taking was also identified.

Immersion

Reference to this feature of creativity, which is about the sense of being immersed in the flow of an activity, focussing and concentrating, was notably absent in the data. There were four mentions from children and young people of related ideas such as needing more time for creative activities (**"I feel like I have to rush everything"** KS2 student), and of the importance of **"letting your mind run wild"** (KS3 student). Since this is an accepted dimension of creativity in the literature, it suggests it is an aspect of creative skills that could be developed across the course of the project.

Being Imaginative and Playful (Playing / being imaginative)

This part of the framework is developed from the three sub-themes, playfulness, imagination and possibilities, each of which were widely discussed as creative skills although there was again some discussion of the best terminology to use. Participants linked this theme with the idea of curiosity and inquisitiveness, freedom, empowerment, and the capacity to look at things from different perspectives. Constraints on developing these skills were noted including time, curriculum and resources.

Imagination

'Imagination' was often mentioned as participants' first association with the concept 'creativity' across all participant groups. Using your imagination was widely viewed as a creative skill central to, or as a starting point for creativity, and industry partners considered it was crucial for innovation, as also articulated by a KS3 student:

> *"if it comes from your own imagination then it can be an original idea."* *(KS3 student)*

It was described in the context of sport as the ability to imagine and plan for different scenarios, without being overly fixed on any one of them – a skill which could easily be transferred to other professional contexts. The idea of imaginative play, described by a participant as **"pretending"** (KS2 student), links this directly with the subsequent sub-theme.

Playfulness

Playfulness was linked with experimenting, with developing and refining ideas, and described in a purposeful sense of 'playing about with your ideas'. For example, a teacher from one of the ARBs described how he had encouraged young people to play as a way of helping them to access different subjects:

> *"I would encourage them to play, say, 'Play with the words and see what you come up with.'"* *(ARB teacher)*

One of the industry/cultural partners also noted that 'playfulness' was a useful word for stimulating creativity in a professional context specifically because it connects people with childhood:

> *"I use the word 'playfulness' a lot… I think it's really good… it reminds us of muddy play…which is actually quite good to keep in your head as adults, definitely."* *(industry/cultural partner)*

There were a lot of comments that 'fun' was an important part of creativity, and in our analysis we connected fun with the idea of playfulness. Improvisation is another dimension of play that was valued by students in the sense of being able to 'think on the spot', which several students described as a skill they might need for their future in the workforce.
There was concern about the term playfulness from some members of the industry and cultural partners network and within one of the staff focus groups who found the word 'frivolous', 'throwaway' and 'not controlled'. This hesitation was reflected in two comments from staff members who said that they encouraged playfulness but didn't use this term. Suggested alternative terms were 'curious', 'exploration/explore' and 'inquisitive'. These alternative terms do not provide equivalence so this part of the framework will be discussed as the project moves forward into year 2.

Possibilities

Recognition of 'considering possibilities' as a creative skill was evidenced in the data in comments which reflected on creativity as something that emphasised difference and could be present either in situations that were 'possibility wide' (for example, being offered choice, having a wide range of possible ways of working/outcomes) and in situations that were 'possibility narrow' (for example finding space for creative response even within a very detailed client brief). It was contrasted with learning situations in which there was just 'set stuff' which could be seen as lacking in scope for possibility thinking.

Generating New Ideas that Matter (Coming up with New Ideas)

The idea of generating new ideas was widely accepted as a central aspect of creativity, particularly in the sense of 'innovation', as discussed below. However, the second part of the description of this theme 'ideas that matter' raised questions: participants asked, who decides 'what matters', what if it's different for different students, does it have to 'matter'? This suggests that the original purpose of this theme as it arose from the literature – to encapsulate a sense of critical attention to the consequences of ideas, to consider the ethical impact of creative actions, to understand diverse values – was not understood, so there is further work to be done to clarify the language, and to develop understanding. The idea of being 'purposeful' was mentioned and is an additional concept could be linked to this theme, also in connection of the idea of 'mattering'. Adjustments have been made to the revised framework proposed at the end of this section to reflect these implications from the data.

Comments are discussed in the original subsections: innovation, considering consequences, and responding appropriately. Revisions are suggested in the light of the data.

Innovation

Creativity was seen as core to innovation, and innovation as core to creativity. It was linked with 'newness' – whether a new way of doing something, being original, making something which is new, trying something new, or turning an existing thing into something new. It was associated with invention, inspiration and 'thinking outside the box' (6 comments using these words). It was also described as having a broader outlook or seeing more than is expected, as not being on a prescribed linear path and as doing something different. There was understanding that things could be new to the student rather than new to the world, and it was suggested that more attention could be paid to innovation as part of the history of subjects such as maths and science.

Considering Consequences

This subtheme arose from literature emphasizing the ethical dimension of creative actions, in the sense of paying attention to the consequences of creative ideas and actions. As such it is an important part of creativity, particularly when understood in relation to the future workforce, and in the context of the climate crisis. It is thus notable that there were no mentions of this within the data and identifies this as an area for development.

Responding Appropriately

This was another part of the framework in which there was limited data identified: four comments related to:

- the concept of being considerate of others' ideas, and;
- queries over the responsiveness of assessment frameworks to 'distance travelled' for each student, rather than fulfilling pre-set criteria.

Considering this in relation to the original description of this sub-theme suggested that it could be productively combined with data within the theme dialogue and collaboration. This would allow the concept of 'understanding diverse values' to be brought out more clearly as a sub-theme in this part of the framework, which together with a clearer explanation of 'considering consequences' may provide a better explanation of the concept of 'mattering' that was not well understood within the title of this theme. Adjustments have been made to the framework below.

Figure 3: ***Action Research CPD Day 1, 22nd June.***

The Penryn Partnership Creative Skills Framework

The Penryn Partnership Creative Skills Framework uses the findings above to refine and adjust the draft Creative Skills Framework devised from the literature. The revised framework is as follows:

Dialogue and Collaboration

Drawing in notions of dialogue, questioning, communicating and collaborating, in both verbal and embodied ways. Features of this skill are:

- Posing and responding to questions, including finding and solving problems.
- Working individually, collaboratively and within a community.
- Negotiating difference, responding appropriately to others' ideas.

Honing and Developing an Idea

This combines the skills needed to develop creative ideas, incorporating aspects of self-reflection together with development of techniques and understanding of the rules, and the persistence needed to progress creative ideas and actions. Features of this skill are:

- Reflection – analysing, evaluating and considering alternatives.
- Understanding the rules and consequences of different kinds of creative action, developing the techniques needed to progress.
- Persistence – sticking with difficulty, tolerating the unknown, crafting and improving work.

Empowered Action

Foregrounding pupils' own agency in creative action, as a skill this includes the ability to take risks and question accepted ideas, the capacity to be immersed, and the ability to act on creative ideas. Features of this skill are:

- Risk taking – challenging assumptions, making mistakes, delivering surprising ideas.
- Immersion – being immersed in activity and focusing, concentrating.
- Taking action – being a self-determined, active learner, putting ideas into action.

Being Imaginative and Playful

This is the ability to utilise imagination, to improvise playfully, and to generate and try out possibilities: as with possibility thinking, it is the ability to go beyond an understanding of 'what is' to consider instead 'what might be'. Features of this skill are:

- Play – improvising (responding on the spot), trying things out, purposefully playing, being open-ended.
- Imagination – going beyond the obvious with curiosity, considering different perspectives.
- Considering possibilities – asking, what if?

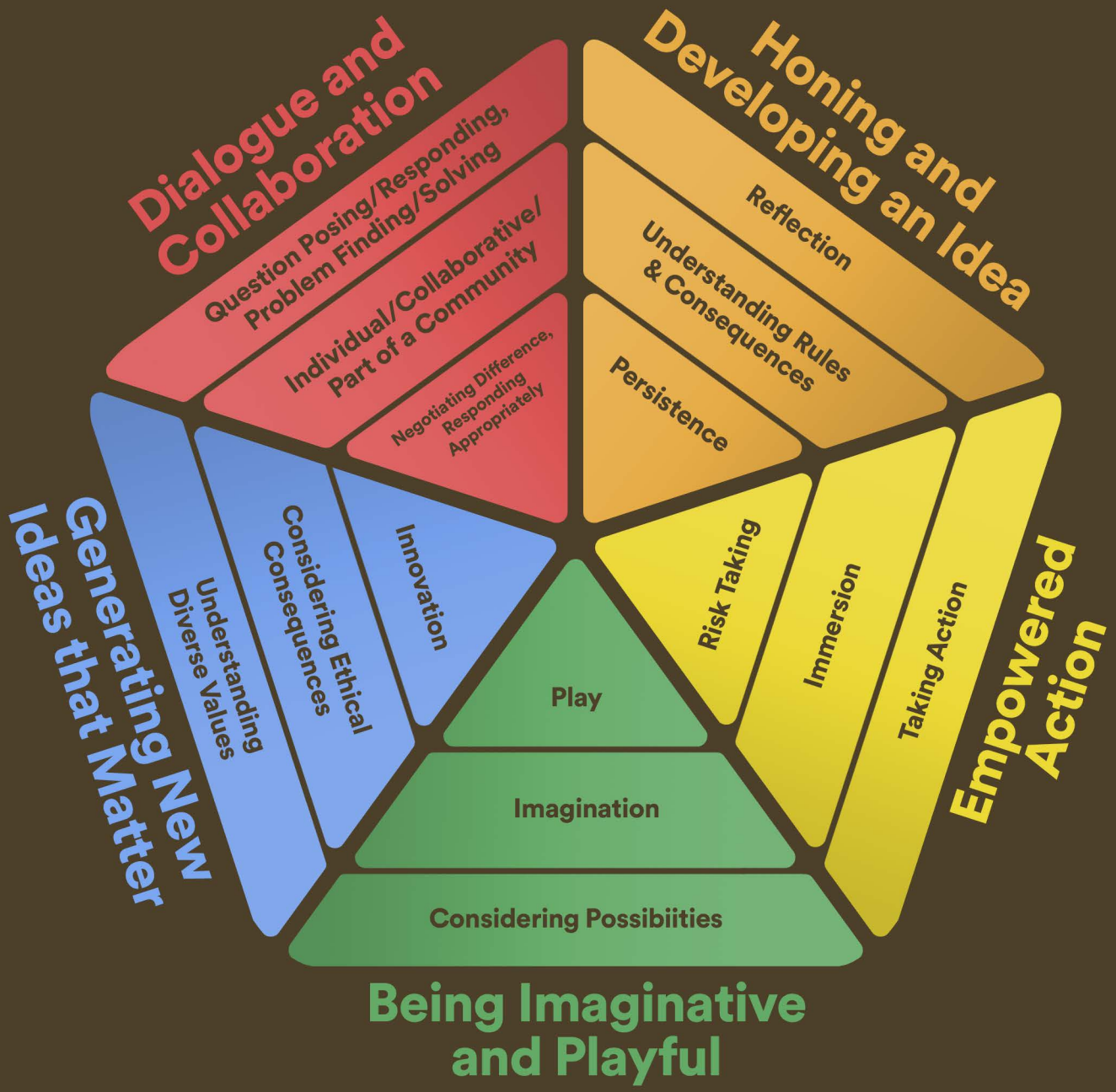
Generating New Ideas that Matter

This includes the ability to combine innovation with critical attention to the consequences of ideas, considering the ethical impact of creative actions, and understanding diverse values. Features of this skill are:

- Innovation – exploring / generating ideas that are new (to the student).
- Considering the ethical consequences of creative ideas and actions.
- Understanding diverse values and how they matter differently.

Preparing for a Creative Future

PENRYN PARTNERSHIP CREATIVE SKILLS



"Does teaching creativity across the curriculum lead to young people who are better prepared for their future in a changing workforce?"

Preparing for a Creative Future DRAFT Framework

The following Draft Framework has been prepared as a starting point for moving forward from Research Question 2, What creative skills are needed to be developed by Cornish students to become better prepared? It is based on the Penryn Creative Skills Framework, and envisages how those creative skills may develop over time, from Foundation Stage to Key Stage 4.

Conceptions of skill development have been modelled on three existing progression frameworks, which include:

- The Australian Curriculum and Assessment Reporting Authority Critical and Creative Thinking Learning Continuum
- The Skills Builder Universal Framework for Creativity
- The Open University's Progression in Creative Learning Pilot project (Craft, Burnard, Grainer & Chappell, 2004)

This framework is presented here in its early stages of development as it stands at the end of year 1.

FOUNDATION (EYFS)
Typically, by the end of the Foundation stage.

Asking and responding to questions based on personal interests to find and solve problems, working collaboratively with highly structured support, to respond to others.

Key Stage 1
Typically by the end of Year 2.

Asking and responding to questions based on personal interests and experiences of the world to find and solve problems, working individually and collaboratively with structured support, to respond to others.

Key Stage 2
Typically, by the end of Year 6.

Asking and responding to questions based on personal interests and experiences of the world to find and solve problems, working individually, collaboratively and within a community with support, responding to others to expand their knowledge about the world.

Key Stage 3
Typically, by the end of Year 9.

Posing and responding to questions to find and solve problems, working individually,collaboratively and within a community with selective support, negotiating difference and responding appropriately to others.

Key Stage 4
Typically, by the end of Year 11.

Posing and responding to complex questions to find and solve problems, working individually, collaboratively and within a community with highly selective support, negotiating difference, responding appropriately to others' ideas.

FOUNDATION (EYFS)
Typically, by the end of the Foundation stage.

Exploring alternatives and sharing ideas, having persistence.

Key Stage 1
Typically by the end of Year 2.

Exploring alternatives, sharing ideas and developing a range of techniques, having persistence.

Key Stage 2
Typically, by the end of Year 6.

Exploring, evaluating and considering alternatives to develop ideas, developing techniques, reflecting to improve ideas and having persistence.

Key Stage 3
Typically, by the end of Year 9.

Analysing, evaluating and considering alternatives to develop and improve ideas, through reflection, understanding the rules, developing techniques, being persistent and tolerant.

Key Stage 4
Typically, by the end of Year 11.

Analysing, evaluating and considering alternatives to craft and improve ideas, through reflection, understanding the rules, developing techniques, being persistent and tolerant.

FOUNDATION (EYFS)
Typically, by the end of the Foundation stage.

Taking ownership of creative actions with highly structured support through risk taking, being self-motivated and immersed in activity.

Key Stage 1
Typically by the end of Year 2.

Taking ownership of creative actions with structured support through risk taking, being self-motivated and immersed in activity.

Key Stage 2
Typically, by the end of Year 6.

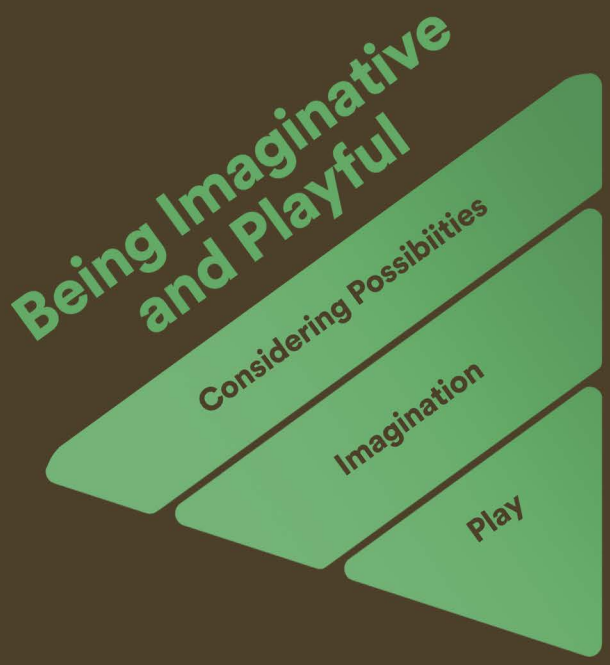
Taking ownership of creative actions with support, through risk taking, being self-motivated and immersed in activity.

Key Stage 3
Typically, by the end of Year 9.

Taking ownership of and acting on creative ideas with selective support through risk taking, making mistakes, being self-motivated and immersed in activity.

Key Stage 4
Typically, by the end of Year 11.

Taking ownership of and acting on creative ideas with highly selective support through risk taking, making mistakes and questioning to challenge assumptions, being self-motivated and immersed in activity.



FOUNDATION (EYFS)
Typically, by the end of the Foundation stage.

Going beyond the obvious with curiosity, asking what if and playing with possibilities.

Key Stage 1
Typically by the end of Year 2.

Going beyond the obvious with curiosity, asking what if and playing with possibilities to try new things out.

Key Stage 2
Typically, by the end of Year 6.

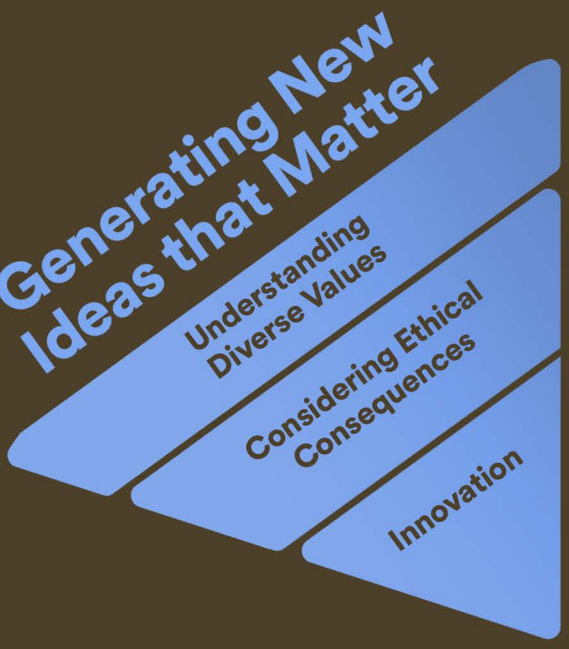
Going beyond the obvious with curiosity, asking what if and playing with possibilities through improvisation and being open-ended to try new things out.

Key Stage 3
Typically, by the end of Year 9.

Going beyond an obvious understanding with curiosity, asking what might be, purposefully playing with possibilities within the context of different perspectives and trying new things out.

Key Stage 4
Typically, by the end of Year 11.

Going beyond an obvious to an increasingly complex understanding with curiosity, asking what might be and purposefully playing with possibilities within the context of different perspectives and trying new things out.



FOUNDATION (EYFS)
Typically, by the end of the Foundation stage.

Exploring and generating ideas that are new to them.

Key Stage 1
Typically by the end of Year 2.

Exploring and generating ideas that are new for them and considering the impact of their creative actions.

Key Stage 2
Typically, by the end of Year 6.

Exploring, generating and combining ideas that are new for them, considering the impact of their creative actions and how they matter.

Key Stage 3
Typically, by the end of Year 9.

Exploring, generating and combining ideas that are new for them and perhaps their peers, considering the consequences and how they matter differently.

Key Stage 4
Typically, by the end of Year 11.

Critically exploring, generating, connecting and combining ideas that are new for them and their peers, considering the ethical consequences and understanding diverse values.

	FOUNDATION (EYFS) Typically, by the end of the Foundation stage.	Key Stage 1 Typically, by the end of Year 2.	Key Stage 2 Typically, by the end of Year 6.
Dialogue and Collaboration	Asking and responding to questions based on personal interests to find and solve problems, working collaboratively with highly structured support, to respond to others.	Asking and responding to questions based on personal interests and experiences of the world to find and solve problems, working individually and collaboratively with structured support, to respond to others.	Asking and responding to questions based on personal interests and experiences of the world to find and solve problems, working individually, collaboratively and within a community with support, responding to others to expand their knowledge about the world.
Honing and Developing an Idea	Exploring alternatives and sharing ideas, having persistence.	Exploring alternatives, sharing ideas and developing a range of techniques, having persistence.	Exploring, evaluating and considering alternatives to develop ideas, developing techniques, reflecting to improve ideas and having persistence.
Empowered Action	Taking ownership of creative actions with highly structured support through risk taking, being self-motivated and immersed in activity.	Taking ownership of creative actions with structured support through risk taking, being self-motivated and immersed in activity.	Taking ownership of creative actions with support, through risk taking, being self-motivated and immersed in activity.
Being Imaginative and Playful	Going beyond the obvious with curiosity, asking what if and playing with possibilities.	Going beyond the obvious with curiosity, asking what if and playing with possibilities to try new things out.	Going beyond the obvious with curiosity, asking what if and playing with possibilities through improvisation and being open-ended to try new things out.
Generating New Ideas that Matter	Exploring and generating ideas that are new to them.	Exploring and generating ideas that are new for them and considering the impact of their creative actions.	Exploring, generating and combining ideas that are new for them, considering the impact of their creative actions and how they matter.

	Key Stage 3 Typically, by the end of Year 9.	Key Stage 4 Typically, by the end of Year 11.
Dialogue and Collaboration	Posing and responding to questions to find and solve problems, working individually, collaboratively and within a community with selective support, negotiating difference and responding appropriately to others.	Posing and responding to complex questions to find and solve problems, working individually, collaboratively and within a community with highly selective support, negotiating difference, responding appropriately to others' ideas.
Honing and Developing an Idea	Analysing, evaluating and considering alternatives to develop and improve ideas, through reflection, understanding the rules, developing techniques, being persistent and tolerant.	Analysing, evaluating and considering alternatives to craft and improve ideas, through reflection, understanding the rules, developing techniques, being persistent and tolerant.
Empowered Action	Taking ownership of and acting on creative ideas with selective support through risk taking, making mistakes, being self-motivated and immersed in activity.	Taking ownership of and acting on creative ideas with highly selective support through risk taking, making mistakes and questioning to challenge assumptions, being self-motivated and immersed in activity.
Being Imaginative and Playful	Going beyond an obvious understanding with curiosity, asking what might be, purposefully playing with possibilities within the context of different perspectives and trying new things out.	Going beyond an obvious to an increasingly complex understanding with curiosity, asking what might be and purposefully playing with possibilities within the context of different perspectives and trying new things out.
Generating New Ideas that Matter	Exploring, generating and combining ideas that are new for them and perhaps their peers, considering the consequences and how they matter differently.	Critically exploring, generating, connecting and combining ideas that are new for them and their peers, considering the ethical consequences and understanding diverse values.

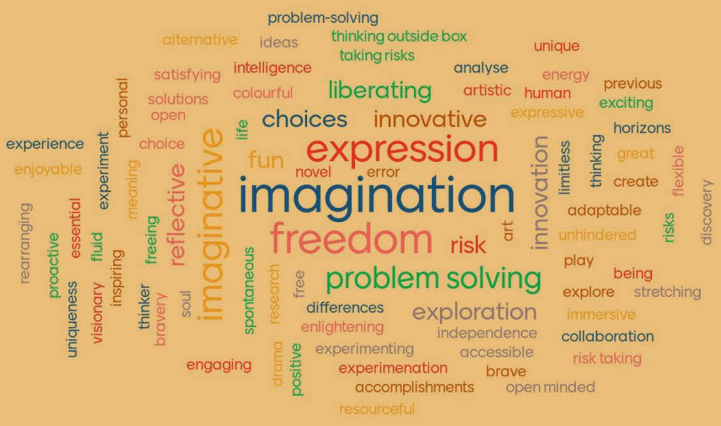
Part Two: Research and Findings for Research Questions 3

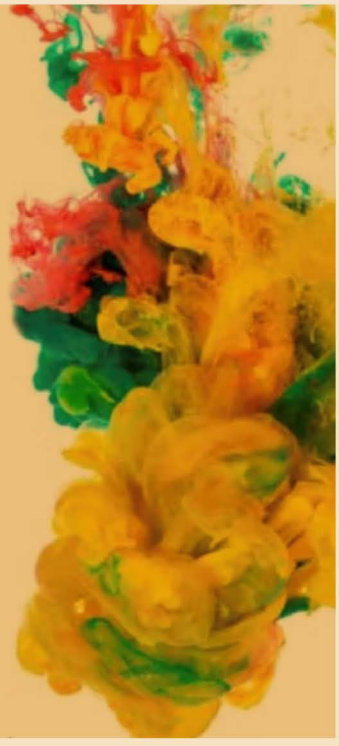
In this section of the report, we discuss the data which responds to our third research question:

RQ3 How do we best prepare teachers for teaching for creativity?

We start by presenting a definition of creative pedagogies which has been synthesised from two key pieces of literature. This helps us to clarify our understanding of what we mean by 'teaching for creativity'. Next, we present the summaries of the survey data from teachers, students and industry partners, which helps us to understand our baseline for the project in terms of current experiences of learning and teaching creatively. We then provide a summary of how teaching and learning is developed across the Penryn Partnership based on meetings with headteachers. We draw some conclusions from this in relation to the research question.

Figure 4: ***March INSET 'How would you describe creativity in 3 words?'***





A Definition of Creative Pedagogies

In order to consider research question 3, it is important to clarify our understanding of what we mean by 'teaching for creativity'. We have therefore developed the following framework which uses as source material two prior reviews of creative pedagogies: Cremin & Chappell's (2019) systematic literature review of 30 years of empirical research on this topic, which identified a series of seven features characteristic of creative pedagogies, and Chappell et al.'s (2016) review which identified a series of eight features of creative transdisciplinary science and arts teaching.

Identified aspects of creative pedagogies are therefore defined as follows:

Empowerment, Autonomy and Agency:

- Learners and teachers both have a sense of agency and are allowed to express themselves.
- Students are empowered to act independently and with agency (exerting power), developing and trying out their own ideas.

Risk, Immersion and Play:

- Teaching/ facilitation creates space for these three processes to occur.
- A trusting space is developed in which mistakes are possible and failure can be accepted.

Possibilities:

- Multiple possibilities are allowed both in terms of thinking and spaces.
- 'What if' questions are used to narrow or broaden these possibilities.

Generating and Exploring Ideas:

- There is a climate of openness – a high degree of acceptance of children's ideas.
- Tensions between openness and structure – a need to balance openness with structure to support learning.
- A sense of both stepping back and stepping in, to balance control and freedom.

Individual, Collaborative and Communal Activities for Change:

- Co-constructing teaching and learning in relationship.
- Group work and collaborating (recognised as real life skill).
- Dialogue – between people, disciplines, creativity and identity, and ideas; acknowledging embodiment and difference and allowing for conflict and irreconcilable difference.

Problem Solving:

- Using real problems to motivate and engage learners.
- Transdisciplinarity – responding to real-world problems by integrating different ways of thinking, including knowing that (propositional knowledge), knowing how (practical knowledge) and knowing this (aesthetic or felt knowledge).

Ethics and Trusteeship:

- Learners and teachers consider the ethics of their creative processes and products.
- They are guided in their decision-making by what matters to them as a community, acting as 'trustees' of that decision-making and its outcomes.

Professional Wisdom:

- Teacher creativity – as background presence, model and source of authenticity, or strong force, underpinning both teaching creatively and teaching for creativity.
- Common educational tensions and dilemmas of accountability/ assessment, marketisation and resource / time pressures are acknowledged and navigated creatively.

Survey Data: teaching for creativity across the Penryn Partnership

This section of the report provides a summary of the data from the University of Durham baseline surveys which were designed as part of the evaluation of the Creativity Collaboratives programme nationally. Surveys were completed by teachers, senior leaders and students[3]; the data included here only relates to the Penryn Partnership participants. Surveys addressed perceptions of a given definition of creativity, and considered how well teaching for creativity was supported and encouraged across the curriculum in relation to that definition. In relation to our research, this provides us with a baseline for our project in terms of teachers', senior leaders' and students' current experiences of learning and teaching creatively.

It should be noted that the definition of creativity provided for the surveys differs both from the definition of creative skills we are developing for Penryn, and to the definition previously provided by the Durham Commission (2019). The definition given in the survey, which the survey responses are therefore based on, is as follows:

> *"the ability to make or conceive a solution that wasn't there before. Everyone is creative, and has the potential to develop their creativity further. Creativity and creative thinking result from a combination of knowledge, skills, attitudes and values, which together form creative competence. Creativity is a mixture of functional and interpersonal attributes."*
> *(Durham Commission)*

Although some qualitative data was collected by Durham University, it is only the quantitative data that has been shared, so this forms the basis of our syntheses. Parallel surveys were developed in Penryn for the industry and cultural partners, and for students from the ARBs, so results from these are also summarised here.

Survey Data: Senior Leaders

- Ten senior leaders responded from across the Penryn Partnership.
- Confidence and experience varied across the partnership when reflecting on their current **understanding of creativity** including responses about current provision and success for teaching for creativity alongside current support for creativity. There was also variation as to what extent schools felt they were currently successful in supporting creativity in their schools. Six staff agreed with the Durham Commission's definition of creativity.
- In terms of **current provision**, senior leaders felt subjects such as Art, Music, Science and PE currently encourage teaching for creativity the most, with MFL and Humanities currently the least. They demonstrated that both a strong subject knowledge and skills are required for creative thinking to take place in the classroom.
- When considering approaches to **Teaching and Learning (T&L)**, senior leaders felt students were given the opportunity to be reflective in their learning though could have more opportunities to try again. Senior leaders consider that students are encouraged to experiment, use technology to enhance learning, and to 'question the question' encouraging them to think beyond assessment goals.
- Senior leaders felt that **collaboration and working relationships** with other schools were widely encouraged. Moving forward, senior leaders felt greater opportunities were needed to develop working relationships with employers in the workplace and with cultural providers.
- **Moving forward**, across the eight Creativity Collaborative pilots, senior leaders rated 'teacher skills' as the highest potential barrier to supporting creativity and creative thinking in schools. Senior leaders felt that more opportunities were needed for students to try again, explore multiple perspectives and encourage persistence, leading to young people who can solve problems in their own way.

[3] A limitation of the surveys noted by teachers is acknowledged alongside the presentation of this data: teachers reported that students struggled to understand some questions. An example was in the primary survey where 148 students across the Penryn Partnership 'didn't know' if they can 'choose to work on something they're interested in', while a similar proportion of students responded to a different question that they could 'solve problems in their own way everyday'. Since these results seem to contradict each other, this reinforces the teachers' feedback that students were unsure what some questions were asking and therefore this led to an 'uncertain' response to some points.

Survey Data: Teachers

- Across the Penryn Partnership Creativity Collaborative, 91 responses were received across nine schools.
- Across the learning community, responses demonstrated that the **Penryn Partnership** has an experienced and longstanding staff body, with staff having been in teaching for an average of 14 years and in their current school for 8 years.
- **52 teachers** felt that the Durham Commission survey definition of creativity was 'very accurate' with 38 feeling it was 'somewhat accurate'.
- In terms of **current provision**, responses demonstrated that teachers felt subjects such as Art, DT, Music, English and PE currently encourage teaching for creativity the most, with MFL and RE currently the least. **Primary teacher** responses show a greater level of confidence compared to **secondary teachers** in providing learning experiences that connect knowledge and practice both within a subject and across subjects. Teachers felt some confidence in use of pedagogies that encourage collaboration, being reflective, encourage persistence and thinking beyond assessment goals, with some variation between schools.
- **Moving forward**, the Penryn Partnership teachers described some lack of confidence in supporting learning that utilises the physical environment including opportunities for outdoor learning, interactions with the living world and cultural experiences. Responses also suggest that students need greater opportunities to encounter the unexpected in their learning.
- Just over half of those responding felt they were currently well trained in teaching for creativity and therefore confident in their capacity to teach for creativity. When exploring further the **potential barriers** to supporting creativity and creative thinking in schools/colleges colleagues were asked to select up to three options that that have the most impact in their school. Lack of teachers' time, limited budgets and teachers' skills in teaching for creativity ranked as the highest potential barriers.

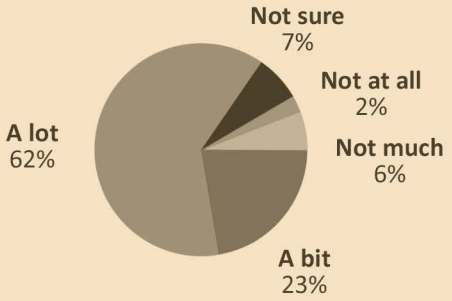
Table 1: ***Potential barriers to supporting creativity and creative thinking in schools/colleges.***

Potential Barriers	Penryn
Lack of teachers' time	45
Limited school budgets	31
Teacher skills relating to supporting creativity and creative thinking	25
Government / policy does not support it	24
Lack of resources	23
National Curriculum	23
A focus on achieving certain grades	19
Ofsted expectations	17
Teacher confidence	15
Student apathy	9
Teachers' subject specialism	7
Behaviour management	5
The ethos of the school	1
Parents' expectations/support	1
Other	1
Poor teacher retention	0
Lack of support from school management	0
Teachers' educational background	0

Survey Data: Students

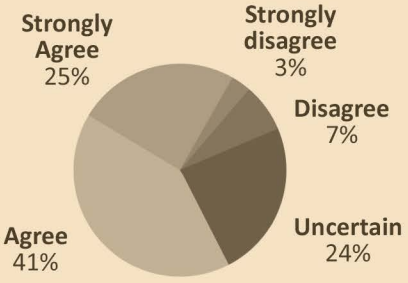
- Students from across the Penryn Partnership responded including secondary students from KS3 and KS4 (449) and primary students from KS2 (432).
- Highlights from the **primary survey** demonstrated that students feel their current curriculum encourages them to learn things that help them be creative, with a majority of primary participants saying this happens either every day or every week.
- Some data saw quite a range of variation between schools particularly around using their own ideas to create things and working with others to come up with ideas.
- Students responded confidently across the partnership that their teachers help them think about things in a different way frequently (every day or every week) with a similar picture when asked **'I learn things which help me be creative'**.
- An interesting comparison can be made between the primary and secondary student responses when asked 'What I learn in school will be important for my future'. A much stronger level of agreement with this statement was shown by primary schools.

Figure 5:
Primary students' responses - What I learn in school will be important for my future



- Learning confidence across the partnership varied with some data suggesting a lack of confidence in sharing ideas, talking about ideas with peers and solving problems.
- Highlights from the **Secondary Student** survey showed students felt they explored their imagination, made original ideas and could choose to work on something of interest in a range of subjects, notably in Creative Arts, English and STEAM (DT and Computing).
- Students told us that in Humanities and MFL they connect their learning to the real world and in PE they frequently work with others to come up with new ideas to help them learn and understand the subject more.
- Core subjects, such as Maths, English and Science, received higher responses with secondary students saying they are often asked questions which encourage them to think about things in different ways. Again it was across the Creative Arts and STEAM subjects that students felt they were taught the skills to help them be creative with a similar pattern when asked about extra-curricular provision.
- When asked, **'What I learn in school will be important for my future'**, a less strong response was given by secondary school students by comparison to primary students.

Figure 6:
Secondary students' responses - What I learn in school will be important for my future



- Similarly to the primary student responses, learning confidence across the secondary students varied with some data suggesting a lack of confidence in sharing ideas, trying again and solving problems.

- The **ARB initial survey** was administered in small focus groups, using questions from the Durham written response survey. **Highlights from the ARB focus group survey** demonstrated that students were able to articulate how their curriculum currently allows them to respond creatively through problem-solving and using their own ideas to create things. They felt they learn things in every subject which help them be creative and often do work where there is no right answer. One of the ARB students said **'we are children, we have an infinite imagination'**.

Survey Data: Industry Partners

- A survey was developed for industry and cultural partners who are part of the 'Creativity Network'. The survey had ten responses from a range of businesses and cultural organisations with a variety of different roles represented.

- **Seven members of the Industry and Cultural partners Network said the Durham Commission survey definition of creativity was 'somewhat accurate'**. Comments showed awareness that a range of definitions is available and expressed the need for an agreed understanding moving forward. Network participants noted that creativity extends beyond the arts and suggested that examples of creativity in action would be useful to include outside of subject areas where it is traditionally expected. Participants felt that this definition lacked any link to collaboration, or to different approaches and influences. Other aspects of creativity they felt could be included were: 'thinking outside the box', generating novel ideas and solutions, problem solving, confidence, and the environment.

- The overwhelming response for why creative skills may be need in a changing workforce was due to the changing technological world.

Creativity Network responses to Skills Needed in the Workforce:

Skills required in their own role and organisation;

10 said asking questions everyday.

8 said cooperating with others and collaboration everyday.

8 said playing with ideas, possibilities and being inquisitive everyday.

Compared with;

4 said developing techniques was needed everyday.

5 said sticking with difficulty, giving and receiving feedback and reflecting critically everyday.

Skills required in a changing workforce;

9 said being inquisitive, asking questions, exploring ideas and crafting and improving everyday.

8 said challenging assumptions, being imaginative, being collaborative.

Compared with;

6 saying sticking with difficulty, tolerating uncertainty, developing techniques.

Developing T&L Across the Penryn Partnership

In order to understand how teaching and learning [T&L] is currently developed across the Penryn Partnership, a series of meetings were held between the Creativity Collaboratives: Penryn Partnership lead and head teachers. Notes from these meetings have been combined with additional information from school websites in order to develop understanding of how pedagogy is developed across a school and then across a partnership.

Understanding the Curriculum Across the Penryn Partnership

Across the Penryn Partnership senior leaders aim to be ambitious with how they develop T&L in their schools. Schools' websites state that they are committed to meeting the requirements of the National Curriculum whilst considering the needs of all learners and their community. Schools have aimed to be inventive with their timetable structuring and staffing to aspire to broad and balanced curricula. This aims to allow greater breadth in the curriculum offer as well as to utilise staff expertise. There are clear intentions to interleave students' personal development across the curriculum, aiming to ensure young people feel a sense of belonging whilst inspiring a passion and readiness for their next steps. Senior leaders aim that curriculum design is driven so that students remember knowledge over time with a significant focus on deep learning (mastery), with the aim that knowledge and skills are embedded and can be applied in a wide variety of contexts.

In both secondary and primary schools, senior leaders aspire to distribute leadership to enable staffing roles and responsibilities to focus on T&L. Curriculum development across the partnership aims to embrace a collaborative approach to designing and reviewing the curriculum offer over recent years. Staffing structures intend to ensure there is a clear pathway for communication with several schools opting to have a senior leader with accountability for T&L. Staffing structures in both secondary and primary schools identify subject leaders or coordinators who develop specific subject areas, for example Head of Faculty in secondary school or subject leads in primaries. In some of our smaller rural schools, staff can often lead on several subject areas. Subject leads often take part in learning walks, book scrutinises and students voice focus groups at key points during the academic year as part of whole school monitoring.

Staffing structures across the schools aim to allow senior leaders to **develop T&L consistently and effectively**. Schools use **curriculum maps and pathways to articulate the learning journey** over time for both students and parents to see. Primary curricula, especially in the foundation subjects, are often topic-based leading to a rotating programme in schools with mixed age classes. This theme-based approach aspires to allow learners to make connections with different aspects of their work, building on previous knowledge in next contexts. This can often lead to project work which encourages students to be inquisitive whilst building opportunities for wider thinking. Curriculum leaders aspire to maximise the learning potential alongside these topics to include additional experience days, trips or external visitors. All schools use extracurricular opportunities to engage students beyond the timetabled school day, providing opportunities across a range of subject areas. The Penryn Partnership have taken time to share curriculums and are building a programme of learning walks to share expertise and practice with the aim to provide a shared offer across the learning journey of all young people and communities.

STEAM
Key Stage 3

Conflict Resolving
Aspirations
Resilience
Confidence
Co-Operation
Integrity
Self-Motivation
Inclusion
Equality & Diversity
Tolerance
Respect
Responsibility

Character

Analysis
Analysing who their design or business is aimed at. Making a design specification, Breaking down a process into steps to be programmed.

Creativity
Designing something news, solving problems, exploring and applying things they see to make a new solution.

Logical Reasoning
Thinking ahead and working methodically. Finding fault in coding. Cause and effect.

Accuracy
Measuring and cutting accurately, using the right language and code, ensuring the outcome fits the brief.

Using Failure to Learn and Grow
When things don't work, which we know will happen, we work out why and it makes us more likely to succeed next time.

Understanding Tools
Knowing which saw to use, using layers in Photoshop, which piece of code and most importantly, why.

Core Steam Skills

Key Stage 4

Web Design
Business and ICT
Modelmaker
Craftsperson
Python Programming
Photoshop
Sustainable Engineering
Cyber Security
Digital Game and Animation Graphics
Computer Aided Design and Manufacture

Students opt for four workshops from the following list. Each offers a 7 week intensive course giving students opportunity to learn new skills in line with their future plans and current interests.

9

Binary and digital coding | Reading from engineering drawings | Accuracy of measurement and manufacture
Microbit programming | Computer Aided Design | Mechanical linkages and force transfer

Knowledge Units
Students learn the new content needed for this year's projects.

Gravity Racers
Linked with Watson Marlow. Students design, build and race a downhill, remote controlled car.

Animatronics
Linked with Engineered Arts. Students design and build a robotic theme park display.

8

Creative Design | Basic Electronics | Drawing for Accuracy | Computer Aided Design | Scratch Programming and basic Microbit

Controlled Light
Students design and build an automated light. Soon to be industry linked.

Action Figure
Students produce a new environmental action hero, complete with game, model and packaging.

Knowledge Units
Students learn the new content needed for this year's projects.

7

Cereal Box Racers
Primary link project, a precursor to the gravity racer project. It forms part of the transition work.

Key Stage 2

Animator and Digital Artist
Architect
Boat Builder
Computer Games Designer
Ethical Hacker
Photographer
Quantity Surveyor
Robotics Engineer
Sound and Light Technician
Structural Engineer
Surfboard Shaper
Web Developer

Careers

Learning Journeys

Food and Nutrition

Excellent Food and Catering students want to learn new practical skills every day and explore ingredients and techniques from around the world. They understand the factors that affect our food choices and are passionate about the wonderful world of Food and Flavour!

Show off your culinary skills in the Practical Exam!

Why is knowledge of nutrition so important for those working in medicine and social care?

How can I use Work Experience and an Apprenticeship to get an early start to my career?

What is the difference between Macro and Micro nutrients and why are they so important?

What is the difference between rearing cows and growing coconuts?

Why does cheese taste better when it is cooked?

Why does bread go brown in the toaster?

What skills and qualifications do you need to set up your own catering business?

What qualities do you need to be a good chef or restaurant manager?

What are the factors that affect the success of a restaurant or hotel?

What makes a 5-Star hotel and who decides?

How do I make restaurant quality fresh pasta?

Food and Nutrition

Hospitality and Catering

Key Stage 4

Support the school community by cooking and hosting events such as Sports Day and other school performances.

Develop skills with dishes such as Pizza and Beetroot Brownies!

What do you have to do to get a Michelin Star?

Develop your cooking skills whilst completing your DofE award by cooking at home or using one of our clubs.

9

What skills can I use to make nutritious, tasty food for myself?

What are the moral and ethical factors we face when buying food in a supermarket?

How are religious celebrations and beliefs linked to food?

How do we plan, source and make cost effective dishes to suit the needs of everyone in our family?

What are Food Miles?

Compete against students across the country in Rotary or Future Chef competitions.

Develop skills with dishes such as Katsu curry and Focaccia!

8

The Nutritionist

What is fusion cuisine?

What does cuisine mean? How do techniques, ingredients and food culture differ around the world?

What factors affect the food grown and eaten in a particular country?

Should we be eating insects?

How will our food tastes and needs change through life and why?

How do we adapt recipes to suit our needs?

Develop your skills and make tasty treats for your family and friends by joining a cooking club.

Discover a wide range of links between Food and other subjects such as PE, Science and RE.

Around the World

How do we reduce our environmental impact when buying food?

Where does our food come from?

Who and what is involved in getting food from field to fork?

Fuel for Life

How do we fuel our bodies with tasty and affordable food?

What does it mean to have a balanced, healthy lifestyle?

How do we use natural ingredients to boost the nutritional value of our food?

7

Develop skills with dishes such as carrot cake and hidden veg pasta sauce!

Primary and at Home

Take part in our primary level cooking competitions and visit the classroom whilst taking part in transition days.

Learning Journeys

Character

Conflict Resolving
Aspirations
Resilience
Confidence
Co-Operation
Integrity
Self-Motivation
Inclusion
Equality & Diversity
Tolerance
Respect
Responsibility

Careers

Food Stylist
Chef
Food Blogger
Supply Chain Planner
Food Critic
Nutritionist
Restaurant Manager
Event Caterer
Quality Control Manager
Menu Planner
Food Safety Manager
Food Service Director

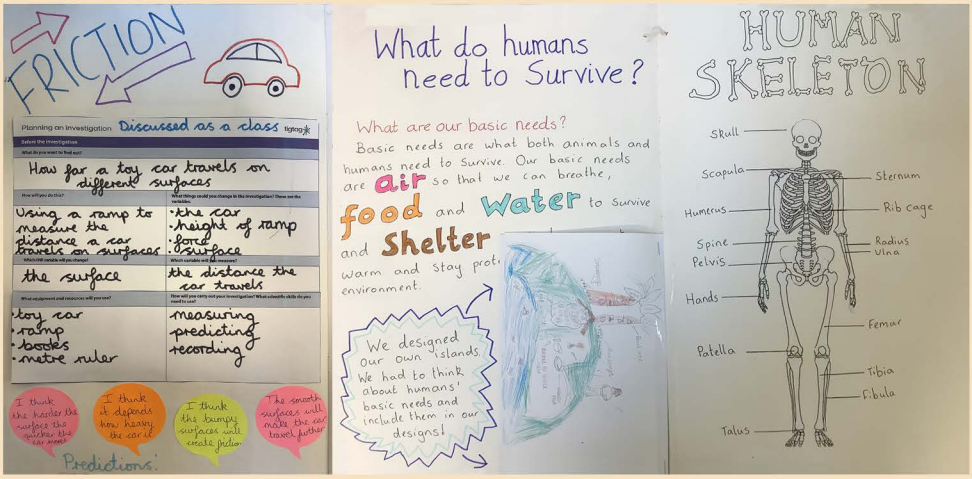
What Does Development of T&L Look Like in the Classroom?

School-wide approaches to T&L manifest in a variety of outcomes across the Penryn Partnership. Many schools strive for a communality of approach across the key stages, whether this is teaching approaches and strategies used in the classroom or classroom routines. Schools aim to embed expectations around sharing the learning intention with the students and using their 'learning objectives' as a learning thread throughout a lesson which can visibly be followed in books and displays. The intended result in the classroom is that students are able to articulate their current learning and how it links to the bigger picture.

Classrooms across the Penryn Partnership aspire to be rich with language and subject vocabulary. Working walls are common in KS2 classrooms, a live and interactive working space which teachers and TAs aim to use frequently throughout a lesson or series of lessons. Headteachers report that the use of technology, especially post COVID, is much wider-spread with staff and students embracing the opportunities the use of technology brings to T&L.

Floor books are increasingly found in KS2 classrooms across the partnership as an innovative method to record students' learning over time both individually and collaboratively. A floor book can include photographs, students' comments, drawings and diagrams. This method aims to allow students to not only articulate their learning journey but visually track their ideas and understanding as they develop their knowledge and skills in a subject.

Figure 7: ***Floor Book, KS2 Kennall Vale.***



How is New Pedagogy Introduced and Tested?

During a staff training day we asked secondary teaching staff (59) to respond on post-it notes to the following question;

'How do you learn about pedagogy to move your practice forward?

Responses fell into 3 main categories: in-school training days, day-to-day learning and additional resources.

In school training days	Day-to-day learning	Additional resources
• Guest speakers Workshops	• Observing others teaching	• Network meetings; county and national
• Discussions with colleagues	• Working alongside others	• Social Media
• Observations and learning walks	• Sharing best practice and reflecting	• Reading education articles
• Sharing best practice across the school	• Practical activities – learning by doing	• Afterschool CPD sessions
	• Workshops	• Discussions with more experienced staff and professionals
	• Reading	

Across the Penryn Partnership there is evidence of staff being encouraged to develop practice in their own classrooms. This individual practice is often then shared across teams through staff meetings after a process of testing and reviewing a range of strategies in their own classrooms. Schools use staff meetings, INSET days and governors' meetings to disseminate goals and best practice aspiring to a collegiate approach to development. Schools within larger MATs (Multi-Academy Trusts) utilise CPD and moderation opportunities across the MAT structure as well as national professional qualifications (NPQs) providers in the South-West. In smaller schools developing networks with other schools and clusters to share CPD and expertise is highly valued.

At Penryn College their Coach Education Programme established in 2019 aims to develop pedagogy through a personalised, challenging and responsive coaching programme. The college moved away from a judgment based observation cycle after extensive research into the impact of instructional coaching.

The Penryn Coach Education Programme has two main aims;

- To develop the craft of Pedagogy across the school using highly skilled coaches.
- To deliver a supportive yet challenging solution focused coaching program to develop pedagogy across the school.

Summary of Findings: How Do We Best Prepare Teachers for Teaching for Creativity?

Key points in response to this question were as follows:

Teaching for creativity can be grounded in the creative pedagogies synthesis as a starting point for understanding the teacher/student creative relationship in Year 2. Features of these pedagogies are: foregrounding empowerment, autonomy and agency; including risk, immersion and play; allowing multiple possibilities; being open to generating and exploring ideas; incorporating individual, collaborative and communal activities for change; involving problem solving; being aware of issues of ethics and trusteeship; using professional wisdom, including teacher creativity.

What we know about how teaching for creativity is currently understood in the partnership: teaching for creativity is perceived by many to be taught through the creative and performing arts subjects in school. Additional subjects such as technology, English and PE were also often cited by staff and students, where they could explore creativity using their imagination, innovation and thinking creatively to solve problems. It was felt that both strong subject knowledge and skills are required for creative thinking to take place in the classroom. The industry and creative partners network championed that creativity extends beyond the arts and suggested that examples of creativity in action would be useful to include outside of subject areas where it is traditionally expected.

How is teaching for creativity currently implemented? Staff and senior leader responses highlighted the challenges around the current implementation of teaching for creativity across the partnership. Teacher time, budgets and teachers' skills were identified as recurring barriers for potential development across the school systems. Students were able to articulate the pedagogies used across their school curriculum, including for example exploring possibilities and solving problems in maths.

The following structures and approaches are described by senior leaders and staff as important for developing teaching and learning across the Penryn Partnership. They consider that teaching and learning is:

- Based on the National Curriculum, with a broad and balanced offer allowing greater breadth and utilizing staff expertise.
- Focused on deep learning over time, embedding knowledge and skills so they can be applied in a wide variety of contexts.
- Utilizing the existing distributed leadership structure for curriculum development.
- Using curriculum maps and pathways to articulate the learning journey over time, sharing with students who are also able to articulate their current learning and how it links to the bigger picture.
- Extensively topic-based curriculum at primary level.
- Applying a communality of approach across key stages including teaching approaches and strategies used in the classroom.
- Developing practice through in school training days, day-to-day learning including observing and working alongside others, and additional resources such as network meetings and discussion with more experienced staff and professionals.
- Making use of staff meetings, INSET days, governors' meetings and CPD across Multi-Academy Trusts.

Penryn Partnership colleagues also shared the following steps to best prepare teachers:

- Sharing existing best practice.
- Exploring together a shared definition about what we in the Penryn Partnership understand creativity to be, securing a language for learning leading to a clarity around the teaching for creativity in schools.
- Sharing resources and sharing research
- Including senior leaders in action research to deepen understanding through a research-informed approach before sharing and building into whole school CPD offer.

Year 1 has allowed us to explore RQ3, How do we best prepare teachers for teaching for creativity, yielding a range of baseline information that will help us to respond to this question with increasing detail over the course of the three year programme and beyond. An aspiration of the project is to develop a matching pedagogies framework to complement the skills progression outlined in the 'Preparing for a Creative Future Draft Framework' included at the end of Part 1 of this report. Action research projects in year 2 may select to focus on pedagogies, whilst others will focus more directly on aspects of the creative skills framework: this aspiration for a pedagogies framework may therefore be developed further within the coming two years, or may likely be addressed further within the Penryn Partnership into year 4 of the project and beyond.

Part Three: Continuing Professional Development in Year 1

Year 1 of the Creativity Collaboratives: Penryn Partnership project included two professional development days. This part of the report includes a summary of each.

CPD Day 1: An introduction to Creativity Collaboratives Penryn Partnership

11 March 2022

The first CPD day involved secondary teaching staff including middle and senior leaders, and was delivered by the Penryn College Creativity Collaboratives lead together with University of Exeter staff. The day included an introduction to the Creativity Collaboratives project, including practicalities and an introduction to how the aims of the projects sit in a wider creativity in education context both nationally and internationally. Staff were encouraged to consider their own understanding of creativity, starting by defining creativity in three words:

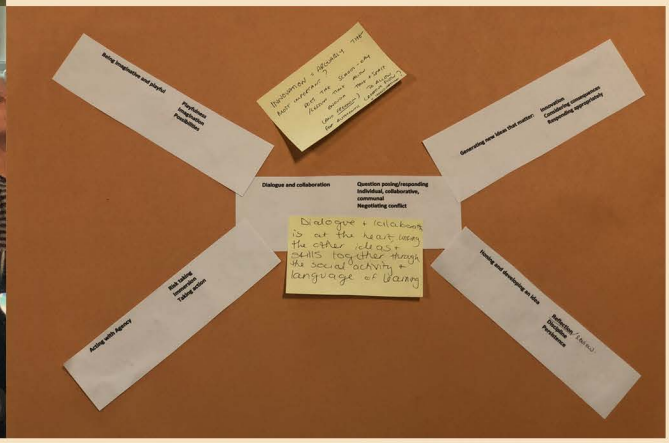


Figure 8:
Penryn College Focus Group 17th May 2022.

An overview of the literature review was presented, and staff were invited to discuss and rank the creative skills as identified in the literature: Dialogue and collaboration, generating new ideas that matter, honing and developing an idea, acting with agency, being imaginative and playful. Lively discussion ensued with many opting for aligning the skills with equal importance reflecting our cross-curriculum delivery.

Staff were also invited to share their thoughts on the project, using the 'Harvard Compass Point' exercise to collect ideas about what they were excited about, worried about, what they still needed to know, and what suggestions they had for the project. Key findings were:

- What excites staff is the opportunity for change and for a cultural shift, handing the learning over to students to take risks, allowing students to actively experiment and use creativity in their learning process, and allowing staff to collaboratively share practice across the curriculum.
- What worries staff is that some think creativity is just for the arts and cannot be applied elsewhere, time restrictions for staff and within curriculums to develop change in practice, how we can include all students and staff so it's not an 'add-on'.
- What staff need to know is a broad working definition of creativity, how can staff evaluate and communicate their existing skills and practice, what training opportunities are on offer, and how we avoid misconceptions.
- What suggestions staff had was embedding in our T&L, CPD offer and language for learning, exploring how to include creativity across our school day including tutor time for example, explore how do we model what creativity looks like for staff and students, and can we develop a creativity toolkit.

CPD Day 2: An Introduction to the Action Research

28 June, 2022

Staff from across the Penryn Partnership joined for the first time as a team of Action Research coaches, including 7 secondary staff and 8 primary staff, who will be leading action research projects in their own schools in year 2. This group was selected following an expression of interest process across the partnership.

Some material from the first CPD day was repeated for the benefit of primary colleagues, and this time both the Creative Skills Framework and the Creative Pedagogies Framework was introduced. To explore their understanding of the concepts, staff were invited to create creative representations of the skills and pedagogies in a range of media.

Figure 9: ***Representations of creative skills and pedagogies from the AR team.***

An initial introduction to the overall Action Research process was given, and a brief introduction to developing good research questions, data collection methods, and ethics. The Durham Evaluation Toolkit (2021) and Paul Hamlyn Evaluation Resources Pack (2009) were shared.

Implications

The following implications are drawn from across the report:

- As the research with Penryn College participants mainly reinforced the literature review findings in response to RQ1 (Why are creative skills needed in a changing workforce?), the PPCC team are confident to step into Year 2 applying the combined logic of the literature review and data analysis to underpin the project.

- It is worthy of note that regarding RQ1, the need for innovation and adaptability in response to the climate crisis and dwindling resources was dominantly noted by industry partners, suggesting this might be a rationale for creativity in PPCC in need of awareness raising for teachers and students.

- Awareness was also lacking around the importance of creative skills for wellbeing, an area which could be developed across the PPCC.

- Given the emphasis in the local context on skills for innovation and growth in science, technology, engineering, small businesses and the creative industries, this is worthy of note for developing relationships with the industry and cultural partners network, as is the noted need to raise awareness in the college as to the diversity of local industries and therefore future employment opportunities.

- As the research with Penryn College participants mainly reinforced the literature review findings in response to RQ2 (What creative skills are needed to be developed by Cornish students to become better prepared?), the PPCC team are confident to step into Year 2 with the refined creative skills framework. The main implications for the framework from the empirical research were:

    - Communication was added to collaboration within the framework.

    - Finding and solving problems was articulated as part of question posing and responding.

    - The term non-verbal was changed to embodied to not put the body in deficit in relation to the verbal.

    - The skill ‘acting with agency’ was retitled ‘empowered action’.

    - The term ‘communal’ was replaced with ‘working within a community’ since this is an important aspect of the Creativity Collaboratives project.

- The term ‘playfulness’ was changed to ‘play’ with the definition clarified, now including improvising, trying things out, purposeful playing and being open-ended.

- Ethical dimensions of the feature ‘generating new ideas that matter’ were clarified, along with emphasising that the concept of what ‘matters’ is linked to understanding diverse values and how they matter differently.

- The term ‘discipline’ was removed as a subtheme, and replaced with its definition which included understanding rules and developing techniques.

- It was noted that participants often associated creativity initially with the arts, although several participants also found that this understanding was restrictive: expanding the understanding of creativity as relating to learning across the curriculum is an issue for the project to address as it develops in subsequent stages.

- Regarding the response to RQ3 (How do we best prepare teachers for teaching for creativity?), the PPCC team are confident to use the creative pedagogies synthesis as a starting point for understanding the teacher student creative relationship within the Action Research.

- Whilst understanding of creativity within the partnership was not confined to the arts it still did not stretch across all subjects; this is certainly worthy of attention in the remaining project phases.

- Heading into year 2 it is helpful to note staff and senior leaders’ awareness of the barriers to teaching for creativity; this cognisance of the issues will aid work to address these.

- Regarding RQ3, considering how we prepare teachers for teaching for creativity, senior leaders’ and staff’s insights provide key ways in to this particularly to support AR development in year 2, and the ensuing embedding and growing of its outcomes in year 3.

- In writing the report it became apparent that it would be helpful to understand Penryn College alumni’s progression routes post 18. The team will try to see what is possible here given that the College finishes at 16.

Penryn Creativity Collaboratives

KEAP kernow education arts partnership
THE WRITERS' BLOCK
A&P
ARTS COUNCIL ENGLAND
Supported using public funding by ARTS COUNCIL ENGLAND
ALLEN&HEATH
REAL IDEAS
Cornish Lithium
Mabe Primary School
Durham University
hall for cornwall

Our Learning Community

WATSON MARLOW Fluid Technology Group
PENDENNIS
MAWNAN C of E VA PRIMARY SCHOOL
FLUSHING C of E Primary School
Penryn College "Achieving through Challenge"
PERRAN-AR-WORTHAL CP SCHOOL
Kennall Vale School Ponsanooth
CONSTANTINE PRIMARY SCHOOL
MYLOR BRIDGE C.P. SCHOOL
University of Exeter
PENRYN PRIMARY

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Creative Skills

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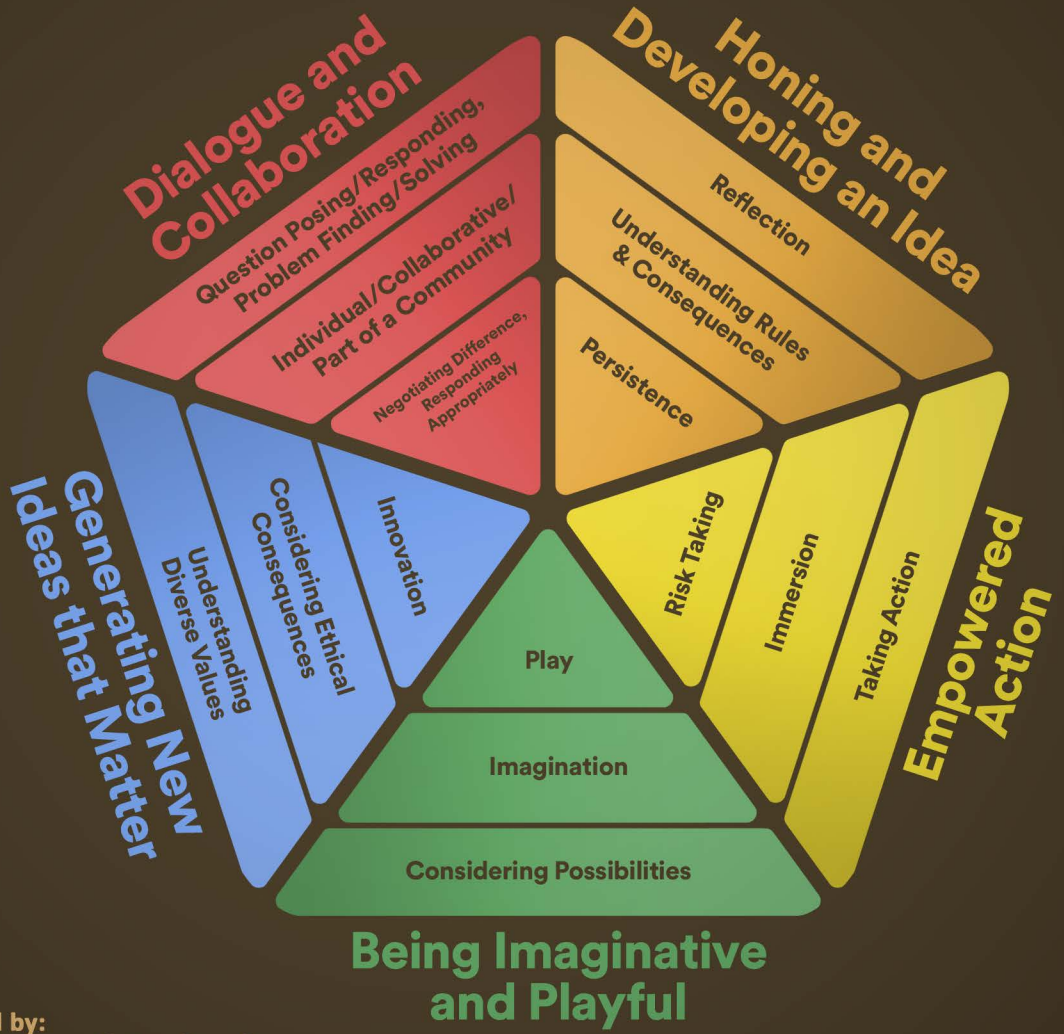
"Does teaching creativity across the curriculum lead to young people who are better prepared for their future in a changing workforce?"



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