

Year Two Report: Build and Test

Penryn Creativity Collaborative Action Research Report

Research Question:

How can children utilise creative skills to show empowered action in the KS1 science curriculum?

Lead Action Research Teacher:

Ellen Churcher, KS1 Teacher, Mawnan Church of England School



MAWNAN C of E VA PRIMARY SCHOOL



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This Action Research project is part of the Penryn Creativity Collaboratives.

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CONTEXT

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, launched in October 2021, is funded by Arts Council England with generous support from the Freelands Foundation. Creativity Collaboratives: Penryn Partnership is the South-West pilot for the programme and over the course of three years is focused on exploring one central question:

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

The Penryn Creativity Collaborative is led by Penryn College with eight local primary schools and research partner, the School of Education at the University of Exeter. This report presents findings from one of thirteen action research projects which took place during Year 2 of the Penryn Creativity Collaboratives programme. Each action research project was led by a teacher with students from their own school, included a link with a partner from a local industry, and the lead teacher was supported by researchers from the University of Exeter through a programme of training and mentoring.

Full findings from Year 2 can be found in the research report. To cite this report please use:

Crickmay, U. Childs, S. Chappell, K. (2023). *Preparing for a Creative Future: Year Two Report Build and Test* <https://penryn-college.cornwall.sch.uk/creativity-collaboratives>

This action research project involved 26 Year 1 and 2 (aged 5-7) pupils of Mawnan Church of England Primary School in Mawnan Smith. Mawnan C of E VA School is a small village school with five classes and 139 pupils. It is a safe and caring environment that provides a wealth of learning opportunities to ensure that each child develops socially, academically and emotionally. We are a small, happy and ambitious school which serves a wonderful community in our amazing Cornish setting. Everyone at the school is passionate about education and works hard to give all children the best possible learning experiences to provide them with a fantastic start in life and to ensure they develop high aspirations for the future. The project was led by Ellen Churcher who is the year 1 and 2 class teacher and is the science lead. Year 1 and 2 pupils learn the Key Stage One National Curriculum of England and are ages 5 – 7.

The project explored how children are engaged with their learning and activities within their science lessons, how they immerse themselves with activities, if they take risks and if they can act upon their own ideas. The teaching and learning styles used were standard practice so it was a very reflective process of what is done regularly within science lessons. Recently, the school invested in the science platform 'Developing Experts' so a lot of the teaching and learning were based using the lesson resources relevant to the KS1 curriculum.

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DEFINITION OF KEY TERMS

Creative skills

The research drew on the Penryn Partnership Creative Skills Framework developed during Year 1 of the Penryn Creativity Collaboratives programme (Crickmay, Childs & Chappell, 2023). The framework defined creative skills in a five-part model and this action research focused initially one part of the model, 'Empowered Action'.

Empowered Action

Foregrounding of pupil's agency in creative action, as a skill this includes the ability take risk 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

According to the draft progression framework prepared during Year 1 of the Penryn Creativity Collaboratives project (Crickmay, Childs & Chappell, 2023), typically by the end of Key Stage 1 (aged 5-7), children should take ownership of creative actions with structured support. These actions will see elements of risk taking, being immersed in an activity and children self-motivated to see something through to an end goal.

As the action research got underway, elements of 'Dialogue and Collaboration' were extremely evident, so this part of the Creative Skills Framework was also explored.

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

Again, using the draft progression framework (Crickmay, Childs & Chappell, 2023), typically by the end of Key Stage 1 (aged 5-7) children can ask and respond to questions based on their own personal interests and experiences. They will also be able to work collaboratively or individually to solve problems. Since these skills were already being seen, it was important to look closely to see how they could be enhanced through structured support.

AIM OF THE RESEARCH

The aims of the research were to understand if and how children are able and encouraged to use their scientific and enquiry approach skills. I wanted to know if children were empowered within their science learning and how they could take this further. I already knew that children have a lot of scientific knowledge and understanding of the world around them but how can we as educators enable learners to take this further?

The following questions were something I thought of as science lead prior to beginning the research:

- What does creativity look like in science and how can we harness it?
- How can we give ownership to pupils in science?
- Are children able to use their scientific knowledge to work scientifically and come up with their own lines of enquiry?

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METHODS AND PARTICIPANTS

The group participating in the study was a class of 26 Year 1 (aged 5-6) and Year 2 (aged 6-7) pupils. The project lasted 20 weeks and was focussed on our science lessons and on British science week.

Methods included:

- Focus groups were conducted in which children discussed their science learning and gave their views on what they think science is, how they are in the lessons and their thoughts about how they are creative. Each group consisted of 4 children across a breadth of science learning abilities. This was to allow a range of responses based on their knowledge, prior experiences and learning and in the hope of including a diversity of views in the research.
- Observations were conducted using the Penryn Partnership Creative Skills Wheel: a data collection tool designed for the Penryn Creativity Collaboratives project. Around the edge it includes the five-part definition of creative skills developed during year 1 of the project, with each skill broken down into three detailed sub-sections. Inside the wheel, teachers or students can mark whether they noticed each of the skills being used a little, some, or lots. Over a sequence of lessons during British science week, the Wheel was used to focus observations on 'Empowered Action' and on how children ask questions and work collaboratively within 'Dialogue and Collaboration'.
- A questionnaire was conducted with the whole class pre-action research and post-action research with the same set of questions to analyse the main strands of empowerment but other areas such as asking questions.
- Photographs were another element of data collection and have been analysed to gauge an understanding of how children work collaboratively in the classroom.

Data analysis was carried out via immersion in all data, followed by transcription of selected audio data. Photographs were coded using the See, Think, Wonder technique from Harvard Project Zero. All data was then systematically coded using low level through to higher level coding which led to a thematic analysis. This is written up below in this report.

Ethical research practice was ensured by following the ethical guidelines of the University of Exeter ethics committee which are grounded in the British Educational Research Association (2018) guidelines; protocols involved seeking informed consent for all research activity from all participants alongside careful data protection practices.

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MAIN FINDINGS

Creative Skills

Empowered action

The main findings in relation to empowered action are that children are very involved with their learning and activities within the KS1 science curriculum. During observations in lessons, it was evident that the children enjoy all elements of their science learning ranging from written activities, making observations and setting up experiments.

The creative wheels below (Figure 1) were completed during observations of lessons that took place in British Science week and each one gives an impression of the class as a whole rather than focusing on an individual child. The wheels highlight that the children in Key Stage 1 were on the whole happy and comfortable with going out of their comfort zone and were confident to take risks in their learning whether that was through learning something new, following a method to set up an experiment or to take the next steps.

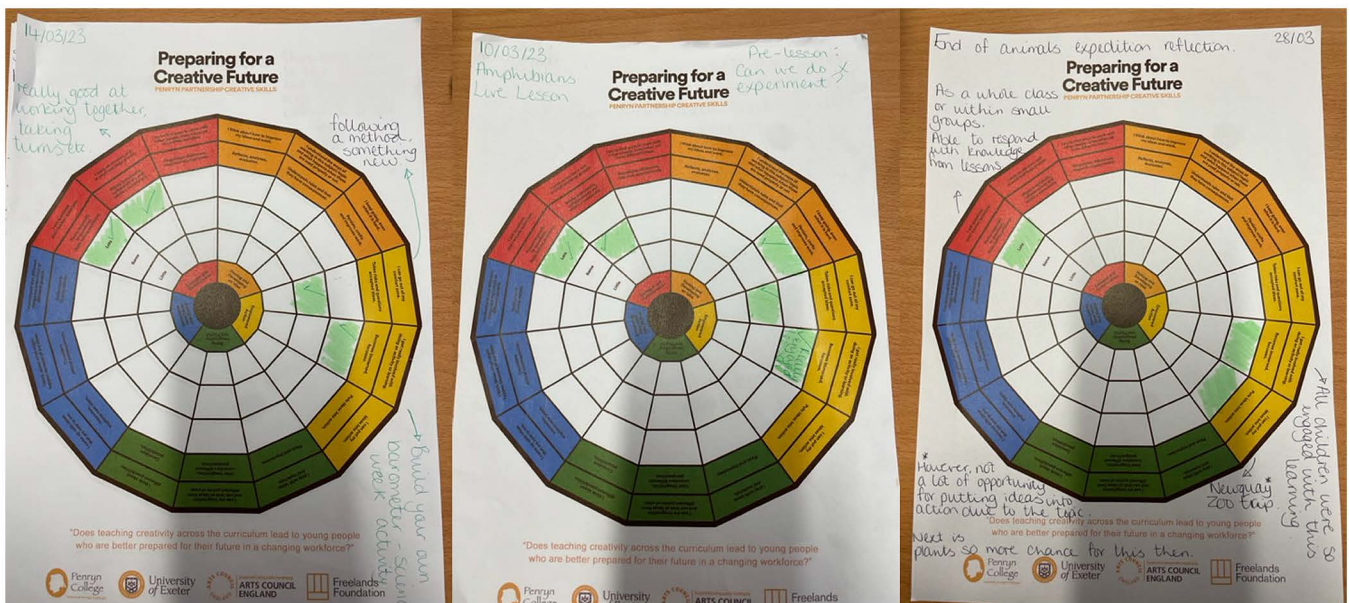


Figure 1: Creative Skills wheels completed during observations

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Observations using the Creative Wheel showed that all the children in this case study were fully immersed and focussed with science lessons. The wheels were used in a variety of lessons and activities that all differed and every child was immersed. The activities ranged from listening to scientists giving information, applying their previously learnt knowledge to a task or conducting an experiment. This suggests that the children, no matter what the task, were confident and comfortable to immerse themselves.

A standout observation that has been made from these wheels is that there are not enough opportunities for children to put their ideas into action and the one example where children were able to put their idea into action was when at home.

According to the Penryn Creativity Collaboratives draft progression Framework, by the end of Key Stage 1, children should be taking ownership of creative actions. When conducting a questionnaire, I asked children if they can put their own scientific ideas into action. 60% of children pre and post research said sometimes with only 34% saying yes. It is interesting to note that the opportunities to put ideas into action is uncertain for the children. As a teacher, I believe the children feel like this because within the school day and the curriculum there is not enough time to give children the opportunity to explore their ideas. This suggests that perhaps the curriculum needs to be adapted to allow children to explore ideas and put their scientific skills and enquiry approaches into action. A question that arose for me was therefore: How can we ensure this whilst still covering the curriculum?

One of the aspects of empowered action within the Penryn Creative Skills Framework is risk taking. I asked children if they felt comfortable going out of their comfort zone. Prior to this research, many children preferred to stay within their comfort zone whereas post research most views changed to a more positive experience.

Prior to the action research, the children were asked if they feel comfortable going out of their comfort zone in their science learning. The responses were extremely varied with 40% of children explaining that they are confident to step outside of their comfort zones and that they like to feel challenged. On the other hand, 40% said they like to stay in their comfort zone with the rest of pupils explaining that it depends on what it is they are doing in a science lesson with even some children saying that they don't feel comfortable but will still do it. Post action research, some results changed with 60% of children responding with being more confident to step outside of their comfort zone and challenge themselves because it allows them to learn more. In addition, some children moved on to say that they would like to but still make the decision not to. This does suggest progress in learning as the thought for challenge is there, perhaps it's just finding the right learning opportunity for those who are still uncomfortable with taking risk. We need to ensure that there are even more opportunities to revisit prior learning to build the confidence of children before introducing new learning. If children, especially in the early stages of their learning journey, have confidence behind them, they will try new things which in turn will allow them to be immersed in more learning opportunities and discover ideas for themselves.

Dialogue and collaboration

It was evident that during our whole class science lessons and from the focus group that children in KS1 demonstrate a good, confident level of dialogue and collaboration. The children are very good and confident at asking questions. The questions sometimes derive within whole class learning where children learn something/revisit something and want to ask a question about the concept. At other times they arose within conversation with the children, for example, they came up with questions when asked if there is anything that interests them or if there was anything they would like to find out about in science.

The children enjoyed working with a group and sharing their ideas. See Figure 2 with images below. This led me to question: If children can work like this in KS1 and we embed this way of working, does this support them long-term in developing skills for the future workforce?

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Figure 2: Children working collaboratively in small groups during British Science Week

Image 1 was during the ‘Build your own barometer’ investigation and image 2 shows children making food chain connections you would find on a farm.

These lessons were part of British science week. The first image is making a barometer. The children worked together, took turns and supported each other with the making element. The second image is making habitat connections on a farm. The children were asking questions about the image and asking one another if one image was part of a food chain, and which order it went in.

On reflection, I felt that the children had developed their skills in dialogue and collaboration in other areas of the curriculum and were able to apply them here in a science context. For example, in lessons, children are good at conversing with one another as they work within small groups and have talk partners. They know how to take turns, which stems from our Let’s Think in English lessons and actively listen to one another. We have spent time learning how to take turns and listen and children show this by not interrupting one another, looking at each other when talking and learning when an appropriate time is to add their own comments.

Prior to starting this research project, nearly half of the class reported that they were confident to ask questions about their science learning and now 68% of children feel as though they ask questions. This could be due to many factors such as now we are in the summer term their confidence has grown. This may also explain the increase in positive responses to the question ‘I feel confident to answer questions in science’ where 56% of children now have the confidence compared to 16% before this project began. In addition, the children have made significant progress in their learning, so they have more knowledge to ask questions. However, in addition to this expected progress, as a teacher I have also allowed more time for discussion to allow children to ask questions. This data suggests that giving children the space and opportunity to have these discussions may be important for them to improve their creative skills in dialogue and collaboration.

DISCUSSION AND IMPLICATIONS OF THE PROJECT AND FINDINGS

This project has led me to question my own practice and to think about how we can empower children to act upon their ideas. It is evident that the children are fully immersed in their learning, ask questions and are comfortable with taking risks in their learning but how can they put their ideas and knowledge into self-motivated action? As a science lead, I want to think about how opportunities in the curriculum can be created to give children empowered action that is in line with teaching a knowledge and skills driven curriculum. Children see themselves as scientists. This progress made by children and the reflection of seeing themselves as scientists is the usual trajectory expected with Key Stage One pupils. From this, we need to stand back and give them opportunities to put their scientific and enquiry approach skills into action which stem from their own ideas. It is evident that EYFS are great at allowing children to explore and learn through play via continuous provision so could this be encouraged right through primary school? If children had access to resources and had the time, could they, with support, then begin to put their ideas into action?

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For my school, the experience has been integral in discovering what our next steps are for the teaching and learning of science. It has opened many ideas of what we want to learn, explore and implement. There are plans to share this information for the academic year 2023 – 24 within Mawnan School and make the teaching and learning of science our next focus subject. As science lead I want us as a team to create learning environments and opportunities that enable children to take empowered action based on their own ideas and knowledge previously learnt. I'd like us as a school to begin to explore how children ask questions and take note of the kinds of questions children ask so that we can tailor the environments to be suited to their needs. From this project I have learnt that children see themselves as scientists so now is an appropriate time to introduce them to and explicitly teach the scientific skills and enquiry approaches through dual coding. 'Dual coding encourages us to systematically and visually approach new information through combinations of verbal and non-verbal elements. At its simplest level, this means pairing text and graphics in lesson slides, notes and posters' (Burnage, 2022).

There were several significant highlights of this research project. Firstly, it was great to stand back and see just how engaged children are with the learning and how they have the confidence to join in with every activity and ask questions during lessons about the content. Also, it has been wonderful to see how children have changed their viewpoint of just learning about science to now seeing themselves as a scientist. Moving forward as a school and as educators we need to learn how we can harness this viewpoint to allow children to explore science more.

The challenge of this project was working with a Key Stage 1 class as they are in the early stages of their educational journey and have less experiences of learning and of the world around them. This meant the data collection process was trickier since children had less understanding to draw on and were less able to verbalise and extend their reflections about the concepts being explored. It would be interesting to address the research question again when working with a Key Stage 2 or Key Stage 3 class. In addition, another challenge faced were the restraints of the curriculum due to the children having to be taught certain concepts and the investigations conducted would link to these areas of learning. The children in this project were highly inquisitive and are confident at asking questions, however being able to action their own ideas was just not possible because the curriculum does not allow for this time. Creativity and exploring ideas are important so moving forward we must utilise children's ability to come up with new ideas and think how we can allow children to action their own ideas within the national curriculum.

REFERENCES

Crickmay, U. Childs, S. Chappell, K. (2023). *Preparing for a Creative Future: year one Report Question, Challenge and Explore.* <https://penryn-college.cornwall.sch.uk/creativity-collaboratives>

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Creative Skills

PENRYN PARTNERSHIP

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

