Creative Learning and Possibility Thinking

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Abstract

This paper develops the conceptualisation of creative learning through the aspect of possibility thinking. It draws upon empirical research being carried out in the CLASP project and focuses on a maths week where the resources used were extensive providing a context suitable for observation of open adventures, open tasks and solution seeking. These are characterised in more detail. We conclude that possibility thinking can become a *creative habit* as one of the 100 languages of children developed at an early age, which they renew in a recursive way when learning contexts are conducive. Its grammar is the features outlined above and its syntax is seen in the discussions between learners and teachers and learners as well as the organising processes that make up the explorations, investigations and problem solving. It is a language that may be invoked by teacher or learner at any time or one that is highlighted as a major strategy. It is a language that stimulates creativity and is used to translate learning experiences into creative learning. Moreover it is an inclusive language that brings learners together either in a specific task or as community of practice.

Creative Learning and Possibility Thinking - D2

Research into creative learning derives from research into creative teaching in which we now wish to look at creativity in learning from the learner's perspective. It involves observing how learners' develop creative opportunities and how they manipulate and reconstruct situations to engage their own creativity. The research also focuses on how learners make their creative experiences meaningful.

Research, carried out by Woods and Jeffrey (Woods, P. and Jeffrey, B. 1996; Woods, P. et al. 1999; Woods, P. Forthcoming; Woods, P. 1995, 1993, 1990; Jeffrey, B. 2001, 2003; Jeffrey, B. and Woods, P. 1997, 2003) so far suggests that creative learning involves:

• relevance. They described teaching that contains this as operating within a broad range of accepted social values while being attuned to pupils' identities and cultures.

• ownership of knowledge. The pupil learns for herself - not the teacher's, examiner or society's knowledge. Creative learning is internalized, and makes a difference to the pupil's self.

• control of learning processes. The pupil is self-motivated, not governed by extrinsic factors, or purely task-oriented exercises.

• innovation. Something new is created. A major change has taken place - a new skill mastered, new insight gained, new understanding realised, new, meaningful knowledge acquired. A radical shift is indicated, as opposed to more gradual, cumulative learning, with which it is complementary.

Considering the relationship among these criteria, we conclude that the higher the relevance of teaching to children's lives, worlds, cultures and interests, the more likelihood there is that pupils will have control of their own learning processes. Relevance aids identification, motivation, excitement and enthusiasm. Control, in turn, leads to ownership of the knowledge that results. If relevance, control and ownership apply, the greater the chance of creative learning resulting – something new is created; there is significant change or 'transformation' in the pupil – i.e. innovation. (Woods, P. 1999).

Woods and Jeffrey (1996) described teachers' strategies for achieving relevance by sharing and creating knowledge with their pupils, stimulating 'possibility knowledge' through imagination, utilizing children's prior knowledge, and developing 'common knowledge' (Edwards, D. and Mercer, N. 1987). In Jeffrey and Woods (1997), student perspectives on creative teaching were discussed, showing relevance achieved by 1} responding to pupils' emotions; 2} engaging interest by having 'fun', giving pupils ideas, stimulating imaginations; 3} maintaining pupils' individuality; 4} encouraging pupils' critical faculties.

Recent research in this area by us (Jeffrey, B. 2001) has found students acting creatively to enhance their learning experiences by:

- using their own experiences to enhance learning contexts;

- using imaginative links to aid conceptualisations; creating social learning interactions with peers;

- adding their perspectives to teacher-led lessons and

- by offering evaluations of learning practices to improve the quality of teaching and learning.

Further research into creative learning is being carried out in the CLASP project – a ten partner European research project funded by the EC, with the English element also funded by the ESRC and The Open University. [See http://open.creativity.open.ac.uk]. This project has identified five foci for researching creative learning - the construction of the contexts for learning; social interactions; cognitive explorations; the subjective experience of learning and an examination of learning processes by teachers and learners [See appendix]. The subject of this paper, 'possibility thinking', is part of the 'cognitive explorations' focus.

Jeffrey and Craft (Jeffrey, B. 2003) have identified a teaching strategy – learner inclusivity - that assists creative learning. It is an approach that includes learners in decisions about what knowledge is to be investigated, about how to investigate it and how to evaluate the learning processes (Craft, A., Jeffrey, B. In press). Teachers using this approach:

- value learners' experiences, contributions, evaluations and perspectives (Jeffrey, B. 2001),

- engage in co-participative ventures with learners, (Craft, In press; Jeffrey, 2003) and

- develop possibility thinking (Craft, A. 2000, 2002)

We focus on the last of these teaching strategies:

> Possibility thinking encompasses an attitude which refuses to be stumped by circumstances, but uses imagination, with intention, to find a way around a problem. It involves the posing of questions, whether or not these are actually conscious, formulated or voiced. The posing of questions may range from wondering about the world which surrounds us, which may lead to both finding and solving problems; and from formulated questions at one end of the spectrum, through to nagging puzzles, to a general sensitivity at the other. Possibility thinking, also involves problem finding. Being able to identify a question, a topic for investigation, a puzzle to explore, a possible new option, all involve 'finding' or 'identifying' a problem (using the word problem in a loose way, to mean 'other possibilities'). (Craft, A. 2002, p. 111)

It is a questioning way of thinking, and puzzling, asking 'what if'. It is being open to possibilities and having an exploratory attitude. It thus involves imagination and speculation (Craft, A. 2002). 'All creativity is creative thinking' (Elliot in Craft, A. 2002, p. 93).

The research, on which this paper is based, shows how using a conception of possibility thinking gives us some insight into the nature of creative learning. The data comes from a primary school with 7 classes during a special Maths week where the whole school focused on pattern and shape. Two classes visited Watford football club, specialist PE teachers gave lessons on shape, two classes visited the local secondary school to use some of their maths apparatus, all the children took part in a sponsored 'mathelon' to raise money for the Great Ormond St Children's hospital in London and they had a maths trail one afternoon where the classes circulated round to every teacher carrying out a different maths activity in each. The week finished with a report to a special assembly of parents. The teachers provided special maths sessions and topics for the week and they found the whole exercise a welcome opportunity to be creative themselves. (To be reported in a later paper). The opportunity to teach is a

major factor in the development of teaching creatively (Woods, P. 1990) and the opportunity to learn is also crucial for the development of creative learning.

Creative learning and possibility thinking

Creative learning is where learning is relevant to the learner, where they have a considerable amount of ownership and control over the materials, techniques and processes of an engagement with some knowledge or skills activity and where the opportunity to be innovative exists, creativity can't be taught, only the conditions created to encourage it (Smith, J. A. 1975). Creative learning involves the experience of dynamic atmospheres (Jeffrey, B. and Woods, P. 2003) climates of anticipation and expectation (Jeffrey, B. 1996), the generation of emotional expression (Woods, P. 1993) and development of understandings, skills, processes, appreciation and thinking.

Creative thinking is just one of the set of thinking skills identified by the National Curriculum, the others being information processing, reasoning, enquiry and evaluation (Wegerif, R. 2002) although they are also involved in creative thinking. The latter has been characterised as tearing up and building (Beetlestone, F. 1998), as imagining, investigating, anticipating, organising, and control of ideas and judgements (Halliwell, S. 1993), collaborations (Cocklin, B. et al. 1996), physical and mental togetherness, making predictions, co-operations, creating one's own assumptions (De Vries), associative collaboration with peers (Dowrick, N. 1993), playing with ideas, possibilities and evaluations,(N. A. C. C. C. 1999), the freedom to investigate, make mistakes and to choose (Reggio Emilia, 1996).

Possibility thinking is a particular part of the process of creative thinking. The instigators of the Reggio Emilia educational programme for young children

> maintain that children are born with all the languages of life. These languages are interactive by nature, and are equipped with the exploratory and perceptive tools for seeking out exchange and reciprocity. They embody the incipient art of the semiologist and the detective, the ability to use investigative methods, to hypothesize 'missing' explanations and reconstruct facts…the more languages we recognise in children, the more we can help them act and identify the methodological models they need for confronting events and experience so as to absorb Olsen's anomalies, Bateson's differences, or Piaget's schemas in as

constructive process that is applicable to all learning. And this gives strength to the children's own projects and desires. (Op.cit. p. 30)

Possibility thinking is a situation where the learner either takes control of an exploration, investigation or problem or collaborates with others in the same processes. Possibility thinking is creative where it involves an exploration of resources, ideas, mediums and patterns, for example, weaving possibilities, how children learn, collage activities and tessellations. Explorations are open adventures.

It is creative when learners investigate the possible techniques for identifying the properties of materials or the processes to arrive at a numerical pattern such as triangular numbers. It is not the outcome of these investigations that is creative but the innovative ways in which learners process the investigation, creativity is a process not the event (N. A. C. C. C. 1999). Year 5 had to create an Aztec container by constructing a 3D net. There were many different solutions but the process was framed by the instruction to create a geometric net. Investigations are open tasks.

Problem solving engages possibility thinking in seeking solutions with an outcome focused approach. Ideas and strategies are posed, discussed, experimented with and evaluated. The drawing of a house with a computer programme without lifting the pen from the screen is an example as is how to count a large number of dots on a piece of paper. The creative processes involve 'what if' questions and the innovative strategies used to solve the problem. Problem solving is solution seeking.

Possibility thinking in the process of creative learning occurs in open adventures, (explorations), open tasks (investigations) and solution seeking (problem solving). Possibility thinking is the action of bringing a new idea or process to the situation.

Central to the opportunity for possibility thinking is the kind of context created by teachers. Teaching creatively leads to teaching for creativity (N. A. C. C. C. 1999) just as providing the appropriate resources aids possibility thinking for learners as in this example where *manipulation*, one of the features of possibility thinking, was significant.

> The Year 4 learners were given white boards and felt tip pens to design cover slides for their topic books. In the Victorian age children used slates and chalk and we have leapfrogged the less efficient period when we used pencils and rubbers to white boards to this creative use of resources.

They then all went into the computer suite and had about twenty minutes to prepare a presentation of a couple of slides. The computer suite was impressive. It consisted of three hexagonal workstations over a metre high with the children sitting on high chairs sharing a computer between two of them. It was in a light airy room with lots of computer designs and relevant vocabulary spread around the walls. The hexagonal workstations were similar to the central control panel in the Doctor Who's Tardis and the head teacher told me it had specifically been designed to be attractive to young learners. The design encouraged the children to consult and collaborate with each other easily. Learners pressed their fingers to their lips as they gazed at the screens exhibiting puzzled brows, balancing on the edges of their stools as they slowly revolved them backwards and forwards. One hand covered the mouse with a constantly twitching forefinger stabbing at its shoulder and the other hand occasionally dabbed at the screen or searched for an appropriate button. They debated and evaluated choices, quality and techniques.

As the teacher demonstrated some of the dynamic actions of this programme, such as how to get words and phrases spiralling on to the screen, I could see how these movements were similar to cartoons. The learners seemed to like the dynamism of a virtual environment where clicks opened menus which were scrolled and trawled and thrown into the ether with another click. (Field Note 19/03/2003)

During the maths week, on which this research draws its data, the resources used were extensive providing a context suitable for open adventures, open tasks and solution seeking.

Open adventures

Learners have personal connections or individual ideas that give relevance to their learning experiences (Jeffrey, B. and Woods, P. 1997). James (Yr 6) was asked why he was trying out different pictures with his tangram pieces before deciding which one to select and he narrated the reasons for his approach:

Because I like being creative. I like making different pictures and drawings, and sketches because I have got a good imagination. When I draw I come out with queer ideas like space ships and when writing a story I think about the future and then I have a story. My mum has told me that I'm imaginative. I'll make

anything that nobody else has made. I go a bit crazy drawing a scientist holding a test tube and getting his face blown up.

Learners bring their experiences, observations and imagination to the classroom to make learning relevant and they also make contributions to the teaching and learning process. One way of doing this using possibility thinking is to make *comparisons*. While listening to details of how to construct a mosaic in Year 3 one boy suggested that 'it's like doing a tangram – following a trail and taking time'.

Control is a major feature of all creative teaching and learning and learners exercise this control as often as they can in learning activities. This control, which is either wrested from young people or negotiated away by them for other benefits such as love, status, self-esteem and more material offerings, is a major element of the creative enterprise (Jeffrey, B. and Craft, A. 2003). Constructing pictures from a tangram means *experimenting,* a form of possibility thinking,

> Jake makes a duck, then an Elvis picture, then a duck's head and a funnel followed by a chimney. 'I'm seeing what I can make. I don't decide beforehand.' 'I've decided on the dinosaur. It's interesting and it's the best of all I have done. It's the most creative.' (Field Note 19/5/2003)

However, different approaches show how possibilities can be located in open imagination as in the example above or by pre-selecting a frame:

> Cloe tries to make a 'spooky' picture because the background picture is black. 'Does it look like a ghost? It's floating. It has a tail like some ghosts and these are the arms like wings helping them to fly. I'm going to do a spider. It's hanging from there. I decided to make it because you find them in spooky places. (Field Note 19/5/2003)

These examples show the different methods used to decide what picture to do. Jake goes for the 'make a lot and then decide approach' and Cloe decides on a *framework* and a more *instantaneous* approach is taken by James. He constructed a design and then used his imagination to determine its constituency.

> I have made a sign that goes on a 'baby changing door'. It struck me straight away. It's my first choice and it looked real. It looks like a baby holder, like a clip.

These three examples show *experimentation, framework development and instantaneous ideas* to be features of possibility thinking in an exploratory context.

Risk taking is also part of the exploratory adventure. Young people experiment from an early age and young learners often want to continue to push boundaries at the same time as they become more aware of the consequences of taking risks. They might affect status, confidence, self esteem, peer and teacher relations but, for some, it is still worth doing if the process leads to innovative opportunities. The Year 4 children had taken pictures of themselves on a digital camera in their computer club and put it onto a Dazzle file. They then worked on reconstructing their friend's picture.

> I made her weird and made her crazy and put weird clothes on her. I put a beard on her and big cracked yellow ears and purple hair with blue spots and I put a crown on her big hair do. She thinks it's disgusting. She'll say "Tara, you're going crazy" as I put on a funny blue nose and weird black eyes (Hannah).
>
> Tara made it crazy. It's funny. If I did look like that I would freak out. (Hannah)
>
> I like being horrible. It's really fun making people weird. It's funny when you print it out. You would say 'What have I done to Hannah. Look at her. She's weird'. (Tara)
>
> Hannah, I think you have made me absolutely disgusting. I hate it. (Tara)
>
> I made it disgusting. I made the scriggly bogies go on her silky dress. The eyes are in different places. That's why there are three. It's turning into a monster and her hands are creaky and freaking (Hannah) (Field Note 20/5/2003)

Taking risks with their friendships is adventurous and dangerous but it would appear that their creative juices have taken control. It may be that it is because they are re-presenting their friends that they feel secure to do something so outrageous. Either way they enjoyed the activity immensely at the same time as experimenting with the technology and a wide range of possibility designs.

Possibility thinking can also be *co-participative*. The Year 3 children are planning a mosaic with some clay tiles. The teacher drew a 4x4 square on a white board and talked about making a design with 2-3 colours.

> The children used felt tips and halved or even quartered the squares and coloured them differently to make a shape or pattern. One boy asked if the class are going to make one large one. Sonia said 'It's a good idea and they may do it

later in the week'. Another asked if they could 'cover them in PVA glue to make them shiny'. Yes, if you think that they are not shiny enough' replied the teacher. (Field Note 20/5/2003)

The children come out to the white board one by one and begin to fill up the example, one square at a time, following other patterns and introducing new elements, e.g.: dots, circles, spirals, wavy lines, stripes/colours. Sonia asks for other ideas after a little while of experimenting. Ashben (a profoundly deaf child) says 'I would do a row of red and then a row of blue keeping it simple. Another suggests interlocked triangles. They are all given a piece of squared paper and they draw a 4x4 square on it.

> One learner produces a very symmetrical with four shapes and 4 colours.
> Another tries to do a dinosaur. Another includes all the shapes arbitrarily.
> Another divides all the squares in two diagonally then puts in different designs
> in each. Another does a mixture of objects. Another colours them in green and
> blue. Another does a face.
>
> One boy says I was doing a stream blue and then it looked like the sea so I
> added the seaside with some yellow and the sun.
>
> When the class are together again the teachers offers them an opportunity to
> show the class and explain their creations. Where she is unsure as to whether a
> design will work she says 'let's wait and see'. (Field Note 20/03/2003)

The exploration began with a collection of possibilities and discussion of them. Some of the learners draw on ideas developed in the joint session, others on the framework provided and others on instantaneous ideas.

Open tasking

Investigations are more specific tasks which employ possibility thinking, although it may be the spontaneous possibility thinking that begins the open tasking.

> One of the Foundation teachers reminded a learner not to 'wear your jumper
> round your stomach. It looks untidy'. Amy said 'And it might squeeze your
> blood and bones. It might make your blood go up and up and up to your ear and
> explode like it did to my sister. It came out of her ears but it might also come
> out of a scratch'. The class then explored the nature of blood flow, and

described explosions by drawing some on the whiteboard. The learners drew arms being thrown into the air. (Field Note 22/5/2003)

Frameworks are often built into open tasking by the teacher rather than chosen by the learner as in the open adventures. Creative choice tempered by patterning limits and technical possibilities still left control in the learners' hands as evidenced by weaving activity in year 3. Emily 'chose to weave red and white because it makes a pattern and matches, the colours go together and the patterns have to repeat'. Creative learning arises from the interaction of the classroom pedagogy and the culture. Open tasking usually results in different outcomes or no outcomes at all.

> One of the challenges during the Maths trail around different classes was to see how far the learners could get doubling numbers, without calculators. Daniel (Yr 5) starts at 110 'because I like a challenge. It doesn't matter if I don't finish'. In this case the finished product is not a requirement nor a focus, the process itself is seen as enough of challenge to engage learners and Daniel used his control over the process to take ownership of the task by starting where he wanted to and to determine its success criteria (Field note 21/6/2003).

Learners are keen to develop complexity as well as challenges. When Year 5 learners were given the task of developing star shapes by drawing lines between six equi-distance points on a circle during the Maths Trail,

> 'Its fun seeing how far you can get, putting in more lines and making it more complex'; 'The colouring is less important than making a complex pattern' (Yr.5) (Field Note 23/06/2003)

Encouraging the context for possibility thinking or possibility thinking itself encourages the construction of creative habits such as *developing complexity and simplicity* as Jamie observed after completing his collaged face plate.

> The plate pattern I have done is too complicated. I wanted to see how many shapes I could make. I've made new shapes. I have to name them. This one is an oval and this is a triangle. This one starts like an oval but it loops round. There are loads of triangles. If I do it again I think I'll do it differently, simpler, it's too complicated. There are bits coming out of it everywhere. It's been quite hard but enjoyable. I would still enjoy a simpler one. I wouldn't have to attach the

bits with sellotape to keep them on. It would still be satisfying, simpler but not so many bits.

Possibility thinking is to be found in the process of open tasking, even in more instrumental tasks.

The Year 6 teacher spent 20 minutes going through their homework which was to find as many words that began with aqua…octo…tri….trans…anni and …sent. One child managed to find over 600 and it must have taken her a lot of hours. However, in the process of class discussion it became clear that she had used a variety of sources including the internet. (Field Note 17/3/2003)

This was followed by a co-participative investigation of the nature of 'pop art'.

She accepted all contributions offered and recorded them on her white board. Her pedagogic style was not 'elicitation' - displaying what one wished to be recorded by choosing the appropriate comments from the children. She accepted all the contributions but she emphasised the one she thought was correct and relevant. Some of the children have developed a style of asking if a possibility might be correct - possibility thinking and possibility knowledge. She then showed them some pictures from a book of Pop Art and established some general conception of it through discussion (op.cit.)

So, possibility thinking had become part of the general culture of this classroom and in doing so each contribution and idea held its value until it fell out of use or it was superseded by others. Possibility thinking as a form of investigation itself had been employed. The investigation above turned into a solution seeking activity when the learners then went to the IT suite to construct a drawing of a seaside picture using a pop art.

Solution seeking

The possibilities employed in the process of solution seeking are only bounded by the parameters of the problem to be solved but the final outcome is pre-determined, although different forms might be produced. Foundation learners used possibility thinking to produce a firework on the Dazzle software in the ICT suite.

Neve – we don't want some white.

Melissa – we can go over it

Azone – with red

> Melissa – I'll throw it away and now I'll put it back. It won't go.
>
> Neve – I'll do another. Your turn Azone
>
> Azone – Your turn Melissa
>
> Never – I'll put it back for you – there.
>
> Azone – You're making the whole page go pink.
>
> Melissa – I'll get it back.
>
> Azone – Let's have some blue on it
>
> Teacher – Try to use the same colour with different shades.
>
> Azone – We could do another
>
> Neve – With different colours or shall we dump it and start again. I'll put it into the bin. I'll kiss it goodbye.

The learners experimented with colour and form and with 'repeat starts', a *recursive aspect* of possibility thinking.

The learners in Year 4 were working on Pascal's triangle in which the sum of the numbers at the end of each line of the developing triangle adds up to, what are known as the triangular numbers, e.g.: 1+2 =3, 1+2+3 = 6, 1+2+3+4=10 etc. There is a pattern to the differences between the triangular numbers, i.e.: add 2 then 3 then 4 to the last total, i.e.: the next triangular number after 10 is 10+5, then 15 +6. Seb commented 'its fun adding up and finding patterns between numbers. It's good finding a pattern in the position of the numbers. It's a finished piece, a masterpiece'.

There is an element of discovery in seeking solutions which feeds feelings of excitement and pleasure and also of ownership and control but if it does not involve innovation the process is less creative. Where the process encourages innovation, such as the construction of patterns for design or as part of the process of problem solving, then the activity can be seen as creative.

> Others took the problem of making as many sums by only using digits 1,2,3. One girl observed that 'You make them up as you go along but you have to think. I learnt to use patterns e.g.: 23+1, 23+2, 23+3; 23+3+1, 23+3+2, 23+3+3; 23+3+3+1, 23+3+3+2, 23+3+3+3. (Field note 21/5/2003)

Patterning is either an outcome of possibility thinking employed across the three contexts learning or is used as a strategy for problem solving.

Problem solving, like excitement and pleasure can only be considered a major element of creative learning if there is an element of innovativeness in the process. Year 5 were asked to estimate how many grains of sand on a picture and to provide details of the methods used to solve the problem: 'I counted the grains of sand in a small area and then multiplied the number of small areas'; 'I did columns and rows'; 'I put a line across and down and multiplied'; 'I circled and counted the number in each circle'; 'I think I had about a 100 cubes of sand'.

These learners have employed a range of possibility thinking features - manipulation, comparison, experimentation, framework development, instantaneous ideas, risk taking, co-participation, complexity development, simplicity extraction, recursiveness and patterning. When these involved innovation creative learning was experienced and enacted.

Creative learning: the learner's perspective.

Encouraging possibility thinking as part of a learner inclusive approach during this maths week at the case study school, generated learners' knowledge about learning itself and highlighted the nature of learning processes. Year 5's evaluation of the competencies gained from constructing their Aztec box included: 'It is how to design something and not mess it up, to reduce the failure rate and to make a box with tabs'; 'We learnt scoring and cutting skills, how to draw accurately, improve computation skills, folding skills, manipulating scissors and practising measuring'. They were also knowledgeable about the nature of learning:

> We discussed the difference between 'natural'/unintentional learning – how to be untidy and school/intentional learning: 'You just do it.'; 'Learning at school is learning how'; 'Natural learning is easy, this learning is also easy'; 'It includes failure and practise and thinking'; 'It includes strategies, different skills and different ways of doing things'; 'We need to think about what we are trying to do'; 'We are conscious of something in our minds'; 'Learning is a step towards something. I am learning that you make mistakes and then practice'; Learning involves planning like experimenting and being briefed first'. (Field Note 20/5/2003).

Learners also understand the relationship between learning and achievement. When asked if there are subjects that they like but in which they are not so competent Sophie

(|Yr. 3) said, 'I like Literacy because of the writing. I'm not good at science but I like the experiments, however I struggle to understand it sometimes'. David (|Yr. 3) said 'I don't like writing stories. I like bike riding and football but I am not good at them'.

A sample of the Year 6 learners had evaluated national assessment procedures and concluded that, in general, they were mostly unruffled by national tests (future paper) but they recommended other forms of assessments that could be used - communicative competencies, collaborative qualities and management of knowledge, e.g.: individual project folders. Learners 'speak the discourse' (Ball, S. J. 1994) and to that extent, like any adult, they are able to engage in discussion and analysis of learning and assessment (Jeffrey, B. 2003, 2001)

Further, the inclusion of possibility thinking in classroom activities has a direct effect on learners' appreciation of creative learning. The Year 5 learners valued the open task of constructing the Aztec nets because it provided opportunities for individual ownership, control and innovation possibilities. Their evaluations included:

> 'Becoming your own teacher, teaching yourself'; 'Choosing the way you want to do it'; 'Choosing is important because you choose the best way of doing it. You know yourself better than others'; You can choose your own level, less challenging and more challenging. Some of us want harder things. I am proud of not being like everyone else. It belongs to you. You own it'; 'You can do what you want to do. You achieve something that was good'.

Making the activities relevant to them stimulated their creativity and celebrating their reasons for making decisions and the diversity of their individual strategies is an important teaching strategy for developing and maintaining creative learning. Being encouraged to pose questions, identify problems and issues together with the opportunity to debate and discuss their 'thinking' brings the learner into the process of possibility thinking as a co-participant (Reggio Emilia, 1996).

Conclusion

Possibility thinking can become a *creative habit* as was exemplified in Year 6 where learners often posed possibilities and in examples of learner explorations, investigations and the processes of seeking solutions. It is one of the 100 languages of children developed at an early age, which they renew in a recursive way (Jeffrey, B.

and Craft, A. 2003) when learning contexts are conducive. Its grammar is the features outlined above and its syntax is seen in the discussions between learners and teachers and learners as well as the organising processes that make up the explorations, investigations and problem solving.

It is a language that may be invoked by teacher or learner at any time or one that is highlighted as a major strategy. It is a language that stimulates creativity and is used to translate learning experiences into creative learning. Moreover it is an inclusive language that brings learners together either in a specific task or as community of practice (Lave, J. and Wenger, E. 1991).

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Creative Learning Research Foci

The identification of creative learning and its characteristics can be observed or interpreted by focusing on: the construction of the contexts for learning; social interactions; cognitive explorations; the subjective experience of learning and an examination of learning processes by teachers and learners.

Creative learning contexts

Some of the contexts that illuminate and stimulate creative learning are:

- The systems to promote creativity and creative learning.
- The climates, cultures, environment that stimulate and develop creativity.
- Policies which: prioritise learner inclusion; develop democratisation; experiential learning and tools to assess creativity.
- Pedagogies that are relevant to learners, where ownership of learning and knowledge is encouraged, control is passed back to learners and innovatory action is encouraged and valued.

Social interactions

A social constructivist approach to learning prioritises interaction between teachers and learners and other relevant adults and between peers. Some of the productive interactive foci for research into creative learning include:

- the extent to which learner voice is prioritised
- pedagogies of open questioning, challenging and problematizing
- co-participation, where knowledge, processes and problems are explored together.
- conversational learning

Cognitive explorations

The development of thinking skills is now a priority within the UK's education policies and particular aspects of thinking that involve explorations are relevant to the experience of creative learning. Research foci include:

- connection making and relationship identification
- possibility thinking and possibility knowledge
- playing with ideas
- the discussion and evaluation of options
- risk taking

- valuing uncertainty and ambiguity and the promotion of alternative solutions

The subjective experience of learning

Creative learning is characterised as a human experience involving the emotions, the development of the self, identity and humanist social relations. Research foci would include the feelings, emotions, the meaning of creative experiences for the self and identity and the well being attached to social cohesion and belonging to a creative community.

Examining learning processes.

The examination of the learning process itself by teachers and learners is an essential element of creative learning. Creative learning includes a conception of the person as an agent of their own practice, someone for whom the process itself is inimical to both the experience of their creativity and its development. As researchers we should include data that includes:

- teachers' discussions with learners concerning their experience of learning
- ways in which teachers include learners in the development of pedagogy and curriculum
- teachers and learners evaluations of the effectiveness of learning processes and in particular creative experiences,
- evaluations of the effects of ideas and actions upon the individuals and groups
- examination of any measures, indicators and assessments of creativity used by teachers or institutions and their development.
- examination of the ways in which ideas are represented – visual, kineasthetic, orally, musically, fictionally, dramatically