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Documenting ‘Possibility Thinking’: a journey of collaborative inquiry

Pamela Burnard, University of Cambridge
Anna Craft, The Open University
Teresa Cremin, Canterbury Christ Church University

With

Bernadette Duffy and Ruth Hanson,
Thomas Coram Early Childhood Centre, London
Jean Keene and Lindsay Haynes,
Cunningham Hill Infant school, Hertfordshire
Dawn Burns,
Hackleton Primary School, Northamptonshire¹

Contact Information for first author:

Pamela Burnard, University of Cambridge, Faculty of Education, 184 Hills Rd. Cambridge CB2
2PQ

Email pab61@cam.ac.uk

Phone 01223 767600 or Mobile 07941 202304

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Abstract

Drawing on existing work in the area of creativity and early year's education, this paper maps the process of an exploratory study which sought to identify what characterizes 'possibility thinking' as an aspect of creativity in young children's learning. With the aim of developing a framework for identifying 'possibility thinking' in the contexts of three early years settings, the authors explore key tenets of a model for conceptualizing (and rethinking) 'possibility thinking' and attempt to reconcile some of the methodological challenges inherent in documenting this aspect of creativity in early years contexts. With the co-participation of five early years teachers as researchers, three university based researchers worked collaboratively over the three phase development of the project. With the emphasis on mapping the developing conceptualizations of 'possibility thinking' and the appropriateness of multimodal methods in naturalistic inquiry, the research team, explicate, and argue the need for sharing methodological approaches in researching young children's thinking. The data arising from this research provides powerful insights into the characteristics of 'possibility thinking' which most successfully promote creativity and the authors conclude with a consideration of the implications for future research, practice and practitioner research in early years contexts.

Key Terms: 'possibility thinking', creative learning, methodology, collaborative enquiry

INTRODUCTION - CONCEPTUALISING 'POSSIBILITY THINKING'

In England, various government agencies including Creative Partnerships (Creative Partnerships/DEMOS, 2003; Creative Partnerships, 2004a, 2004b), National College for School Leadership (NCSL, 2004, 2005) and the Qualifications and Curriculum Authority (QCA 2005a, 2005b), are inviting answers to questions about how best to operationalise creativity in British primary education. Much of this work is influenced by the statement, that creativity is 'imaginative activity fashioned so as to produce outcomes that are original and of value' (NACCCE, 1999:29). This work has led to the development of a policy framework for creativity proposed by the UK Qualifications and Curriculum Authority (QCA, 2005a, 2005b), which arises from a four year development and research project that aims to enable teachers to find and promote creativity in classrooms. One aspect of that framework focuses on the development of a conceptualization of 'imaginative activity'.

There is a growing consensus that 'imaginative activity' is, as reported by the National Advisory Committee for Creative and Cultural Education (NACCCE, 1999), at the heart of creativity. Whilst considerable headway has been made in elucidating the nature of children as creative learners and in terms of creative learning characteristics (Jeffrey, 2003, 2004, 2005), the dilemma is that children do not engage in imaginative activity and become creative learners without first acquiring the requisite tools for thinking creatively. One of these tools has been conceptualized as 'possibility thinking' (Craft, 2001). But *what* distinguishes 'possibility thinking' and *how* might we go about identifying and tracking it?

Coming from the tradition of psychological research, the question of how children develop as creative learners has been reported from the biological bases for creativity (Martindale, 1999) and learner dispositions which seem most supportive of creativity (Claxton & Carr, 2004). From an educational perspective the notion of 'possibility thinking', is proposed as a particular dimension

of and uniquely salient to creative learning by Craft (2000, 2001), who conceptualizes it in terms of both problem finding and problem solving, through the posing, in multiple ways, of the question ‘*What if?*’ ‘Possibility thinking’ is implicit in the learner’s engagement with problems as the shift from ‘*what is this and what does it do?*’ to ‘*What can I do with this?*’ Craft (2001, 2002) proposes that ‘possibility thinking’ may be seen as at the heart of everyday, or ‘little c’ creativity, and that it can be understood from the tripartite perspective of people or agents, processes and domains. She suggests nine features are necessary which may be clustered into two overlapping sets of concepts; one being to do with the generative process itself, and the other to do with activity and outcomes, as represented in Figure 1.

Figure 1: Theoretical Concepts (Craft, 2002)

In order to extend and develop this conceptualization we set about designing a study which offered opportunities for both testing and generating empirically grounded categories of what characterizes ‘possibility thinking’ in creative learning within the learning engagement of young children. We sought to identify and document ‘possibility thinking’ in the context of:

- interrogating Craft’s (2002) conceptualization of ‘possibility thinking’
- generating empirically grounded categories; and.
- Developing and further refining the QCA Creativity Framework (QCA, 2005a, 2005b).

METHODOLOGICAL CONSIDERATIONS

In our view, documenting the existence and uniqueness of ‘possibility thinking’ in the events and actions arising from learner engagement and teacher pedagogies requires careful reflection on and reconstructions of practice alongside observation and systematic event recording. For this reason we chose naturalistic collaborative inquiry as our methodical approach. The study was carried out

in three early years settings: an early childhood centre, an infant school and a Key Stage 1 class in a primary school. The research team included two head teachers, two teachers and a teaching assistant along with three core university-based researchers and three further researchers who were more peripherally involved.

We adopted a deductive-inductive analytical approach. The team worked *deductively* by working with an existing conceptual framework or set of categories (i.e. the ‘possibility thinking’ framework, linked to the QCA framework as shown later in Table 1) and looked for evidence for the key factors and the presumed relationships among them from the data. We also worked *inductively* by re-looking at the data to identify emergent categories and relationships. By using this combination of approaches we aimed to ‘ground’ and ‘support’ theories (Glaser & Strauss, 1967; Strauss and Corbin, 1998). In this way we benefited from the focusing and bounding function of a conceptual framework whilst allowing new concepts to emerge. The key steps and narrative reflection on the process follows.

Data collection methods

One of the greatest challenges for us as researchers and researcher practitioners of young children’s learning was capturing the complexities of and interplay between learning and pedagogy. We considered alternative approaches drawn from our previous work with researcher practitioners and drew on others whose research dilemmas in this domain have been carefully documented (Christensen & James, 2000; Graue & Walsh, 1998). After several meetings we developed the following data collection methods:

- i. Video-stimulated review (VSR) or dialogic view viewing of classroom interactions was used to stimulate reflection and critical conversations about ‘possibility thinking’. VSR is a powerful tool for educational research and reflection on learning (Walker, 2002;

Zellermayer & Ronn, 1999). The initial material for video-stimulated review (VSR) was drawn from the QCA *Creativity: Find it! Promote it!* video (QCA, 2005a) compilations and original video data sets from 5 schools drawing upon settings from Foundation Stage to KS2 (that is, with children aged three to seven). The two schools and one nursery involved in this project were among those featured in the video. VSR gave the teachers involved in this project the opportunity to view and discuss the footage and to analyze their own practices.

- ii. Both participant and non-participant observation was also used, underpinned by an ethnographic approach to the process. The university researchers acted as non-participant observers. Their observations were carried out in an open-ended way that screened nothing out, noted as many details as possible. All observers were guided by overarching categories whilst remaining open to new insights (Jones & Somekh, 2005).

- iii. Event record or event sampling analysis was drawn from detailed transcription of action and talk by a particular child in contemplative time or immersed activity and from children's interactions as they engaged with a particular object, event or particular setting. A useful frame for understanding children's learning is to document at the micro level each of the actions – nonverbal and verbal- used by children to 'possibility think' in educational settings. We hoped that the documentation of brief episodes of children engaged/immersed in short sequences of talk and action would illustrate something of the kind of variation with which 'possibility thinking' might be concerned. It was decided that event or activity recordings would be helpful to describe a specific recurring activity. The activity record, as described by Werner (1992) and Werner & Schoepfle (1987) was used to document specific actions and make activities very explicit.

Research design

The research was conducted over the course of a year in three phases:

Phase 1 (September-December 2004)

Phase 1 involved video stimulated recall and analysis of the QCA video material using a documentation framework organized into a three-fold structure (process, outcome and process plus outcome) that mapped in to the QCA Creativity Framework, (see Table 1 below). All members of the team were involved. Whilst no revisions were made to the structure at this stage, there was general agreement on the centrality of both play and posing questions as processes implicated in ‘possibility thinking’.

Phase 2 (January- April, 2005)

In this phase, in addition to continuing interviews and informal conversations with teachers and other support personnel in each school, data collection consisted of extensive classroom observations in each setting. This was considered a useful way of validating research findings through triangulation (Somekh & Lewin, 2005). This yielded field notes of 15 hours of classroom observations and 9 hours informal conversations, along with documents such as students’ work, photographs, curriculum guidelines and data on class planning.

Phase 3 (April-September 2005)

The clarification, testing and triangulation of research findings from the first two phases was achieved through more extensive data collection consisting of a further 15 hours of videoed observations in each classroom.

In addition to the opportunities to interrogate video documentation of their practices and to triangulate observations made during visits to the classroom, the teacher researchers also worked

with one another and the university researchers during two and a half days' data surgeries / research meetings. This collaborative practice enabled them to engage in in-depth reflective practice, involving both reflection-in-action and reflection-on-action (Schon, 1987) across the twelve month period of the project. These meetings, together with the collection of multiple sources and data collection strategies provided us with considerable saturation and triangulation of data.

A collaborative enquiry

As a research team, we sought to develop co-participative and innovative methodological ways of identifying and documenting 'possibility thinking' in learner engagement and teacher pedagogies. A dimension of our co-participation was the inclusive structure and composition of the research team, which included practitioner researchers and university-based researchers. All colleagues were encouraged to engage with the data in-depth and in ways meaningful to the development of their respective practices. We wanted to frame our data collection and analysis in as creative a way as possible to ensure both generativity and analytic acuity.

The research process of collaboration as experienced during our research partnership included the processes of: (a) positioning, recognizing possibilities and negotiating initial ideas; (b) sharing and detailing ideas and solutions; (c) agreeing; (d) generating, reviewing and converging; (e) analysis and synthesis and evaluation; (f) generating, detailing, repositioning and converging. The underlying constant aspect of this process was that the lens that served as our theoretical guide also served to connect and reframe our understanding of what constituted 'possibility thinking'.

Introducing the settings

At Thomas Coram (the Early Childhood Centre), the way of working for both Head teacher and class teacher was with a focus group of ten children. The close observation employed and the fact

that the setting as a whole takes children from six months to five years creates supportive conditions and a rich knowledge of each child.

At Cunningham Hill (the Infant School), for both class teacher and teaching assistant the emphasis was on facilitating the transition from home or previous setting to school by making relationships with the children prior to entry. The emphasis here is on the children's ownership of space and contribution of their ideas to the development of the learning environment in particular through interactive display. The time spent on developing children's skills and knowledge to facilitate this co-participative approach to the learning space, creates enabling conditions together with a strong sense of each individual and their context.

At Hackleton Primary School, the Key Stage One teacher focuses upon developing both autonomy and agency through 'curriculum flows', creative teaching and learning planned in response to the children's interests and questions. Research, reasoning and recording are seen to be essential complements to the traditional '3 R's' and the emphasis is upon children working in teams, experiencing, exploring and helping one another while the teacher sets directions, offers opportunities and acts as a guide and a resource.

INTRODUCING THE ANALYTIC STORY

One of the reasons why it is so difficult to capture the complexities of children's learning is that we often do not possess a well founded language to classify, relate, document and communicate about the different kinds of thinking we observe. In order to refine our claims about what 'possibility thinking' might mean and more importantly, might look like, we made use of existing theoretical and conceptual frameworks to develop the documentation framework (see Table 1)

used in the present study. This framework started with three assumptions or sets of ideas involved in ‘possibility thinking’:

- those associated with the process of creativity,
- those associated with the outcome; and
- those which apply to both process and outcome (Craft, 2001) some of which appear also in the QCA framework

Table 1: ‘Possibility thinking’ documentation framework

This documentation framework was developed by the university researchers for circulation to the teacher researchers. The latter were asked to try using it to document evidence of learning and pedagogy that they felt they could: (i) see in the video of their own practice; (ii) in the interview transcripts and (iii) in any other form. With three research sites and sets of researchers we were able to provide alternative examples and exemplars that could contribute to our evolving theoretical interpretations (Corbin & Holt, 2005).

Questions, probes and discussion during the data surgeries, research meetings and several additional school-setting-based sessions focused on what teachers considered significant. The conceptual structure that evolved was the outcome the deductive-inductive analytical approach outlined above. These efforts were supported by prolonged engagement in the field and by testing the emerging interpretation of each university researcher against practitioner researcher perspectives, a process sometimes referred to as ‘member checking’ (Lincoln & Guba, 1985).

ILLUSTRATIVE EXAMPLES OF THE CATEGORY OF ‘POSING QUESTIONS’

The three exemplars of the selected category of ‘posing questions’ that follow are representative of the three layers of analysis which we used to test and further develop Craft’s (2002) theoretical model and the themes identified in the ‘possibility thinking’ documentation framework.

- i. The first exemplar draws on the video stimulated review data from Phase 1 of the study. It features critical conversations between teacher and researcher at the first data surgery reflecting on an activity involving ‘Developing a fire and water display’. This features evidence of children’s silent questions; modeling; different forms of posing questions.
- ii. The second exemplar is drawn from the observation data collected in Phase 2 of the study. It features thick description of children involved in creating ‘3D moving models based on an Egyptian tale’ and offers evidence of children’s- teacher’s questioning stance; framing questions and different forms of questioning.
- iii. The final exemplar draws on event recording and micro analysis of the transcription of an episode with 1 teacher and 3 children (initially 2) all girls, involved in ‘Sand Play’ using clear plastic bottles, a blue plastic spade, a stainless steel jug, a plastic funnel, a red cone with holes and a sand tray. This data was collected in Phase 3 of the study.

Exemplar 1: Phase 1 - Video stimulated review data

At Cunningham Hill Infants’ School, the focus of the VSR discussions between the research team included exploration of an episode where a group of 4 – 5 year old children are developing the fire and water part of the class display. They were deciding what colours to use, how to cut and stick things on and were working with one another to consider how to relate their part to what the next child was doing. They were also deciding where to place the fire and water on the display wall when they had each completed the activity. The activity was led by the teaching assistant.

The use of interactive display forms a strong element of the way this class works – the children generate ideas within a broad framework for displays, then help to make them and later play with them once constructed. As the teaching assistant says:

‘They can use and touch and move about anything that’s on the display – there are some parts that won’t move, and that’s obvious to them from the very beginning – but all of them will have an aspect that they can actually be involved with and change to suit them’.

(Transcript from QCA Filming April 04)

In the transcripts of interviews made at the time of the QCA filming, the teacher and teaching assistant talk about the need for children to collaborate to foster this kind of learning, generating ideas and possibilities together. As the teacher says, *“if you allow children to do this to talk and encourage this they inspire other children who are perhaps less confident. Children learn so much from each other”*, (Transcript, QCA Filming, April 04). In the case of this episode, the teacher also comments on how engaged the children were: *“they were really full of it”* (Transcript from QCA Filming, April 04). The teacher seemed to feel that making connections was very significant: *“we need people who can make connections, can make links and can think creatively... the early years are the most wonderful opportunity to do this. To allow children to try things out in a safe environment ...to make links, think creativity and have confidence to do so.”* (Transcript from QCA Filming April 04). Both the teacher and the teaching assistant saw shared control of learning as significant, within a framework of shared understanding of expectations. As the teacher says: *“We can share control of learning because I know the children know what is expected of them and expected of each other too and they know it’s a safe environment too.”* (Transcript from QCA Filming April 04). Both teacher and teaching assistant discuss the need to teach children basic skills which are applied in creative sessions, and to ensure that they can and do find the resources they need for any given activity; the children are

encouraged to internally engage with their own questions through being given a great deal of choice within structured boundaries.

Emerging from the transcript is an expectation shared by both teacher and teaching assistant, that children's curiosity should be encouraged and fostered in the classroom, in part through choice and the development of independent enquiry through co-participative engagement with peers and adults.

The video-stimulated review sessions highlighted the significance of provision of a richly resourced environment, the knowledge of the children's contexts and interests beyond school, observation, team work and children taking on the role of mentor to one another all as central pedagogical strategies for prompting 'possibility thinking'. The enabling environment was seen to encompass the ethos and practices of class and school, including relationships between staff and staffing models, values and expectations about why the class and the school work in the ways that they do, from individual tasks and activities, to programmes of work and outcomes.

During a subsequent researcher visit to the classroom, 'posing questions' was one element focused on closely. The children were engaged in a series of activities to help them to recognize and work with the shape 'square'. The notion of 'invisible questions' emerges from the notes from that visit, in that much of the question was felt to be implied, as perhaps demonstrated by these examples:

... one child was drawing her square pattern in her book and said, '*I've done a square roof!*' .. which led to a conversation on her table about why... she said '*I was going to do a triangle one but we had to use squares only so I did a square roof!*' she seemed to find this very amusing.

... a child at the art table picked up an artefact and said, *'Hey this is a square too!'* implying that he had been asking himself if this was indeed a square, or not.

... Another child used a blue block to help block out some of the white gaps left in her prints and said, *'I'm using this to get every colour in the white bits'* – suggesting she had wondered how best to do this.

It was felt that sometimes the questions suggested the child's intention / vision for their creative project. For example, *'Is there a blue sponge? There should be a blue sponge'* Adults modeled questioning which may have underpinned these statements – for example *'Is this a square?'* *'Is this the same size?'*

Exemplar 2: Phase 2 - Observational data

Observational data from Hackleton Primary School, Northamptonshire, suggests that the teacher's questioning stance is mirrored by the six and seven year olds, who, with considerable self confidence and independence question each other constantly as they possibility think their way forwards. *"Why are we creating pictures and models of this creation myth?"* enquired the teacher, setting the scene by questioning the activity's purpose. Satisfied with the children's reasoned connections to their Egyptian investigations, she revisited the open challenge, reminded the groups they had two more sessions to complete their moving models and framed the first activity by commenting, *"Take as long as you need now to get ideas ready, to ask each other questions and work out a way to begin"*. With time and space to think, draw, talk and generate ideas, the class dispersed quickly into their self chosen groups. A trio of motivated boys, Jo, Jacob and Charlie gathered around a table, posing questions to both themselves and each other.

“*What thoughts have you got?*” Jo asked. “*What about making the mountain world?*” suggested Jacob. “*Could we have a hill?*” pondered Charlie as he drew a quick line on the rough paper they’d taken,” *Then perhaps we could make a slit here or maybe here, what do you think?*” “*And what- move the sun through on a stick do you mean?*” checked Jo using his hand to demonstrate this.

During the following 45 minutes this group, like their peers, discussed options, collected materials and collaboratively trialled ideas in action, constantly reviewing their progress. Their teacher watched carefully, noticing difficulties and joining groups to support and challenge children’s thinking. For example,

“*Oh no we’ve got trouble!*”

“*It’s not stable is it?*”

“*Let’s have a look*”

“*It’s all floppy*”

“*What are we going to do now?*” Jacob asked. Their teacher deftly reversed the question and in a genuinely interested manner enquired “*What have you noticed here? What ideas have you got?*”

In the ensuing discussion she valued the suggestions offered, but ensured the locus of control remained securely with the learners. This was also exemplified at the end of the session when she sought to prompt evaluation through questions and silences patterned naturally within the class’ conversation, “*Whose is turning out the way they expected?*”, “*What problems did you encounter?*”, and “*Is it okay to look at someone else’s ideas?*”

The diverse replies were treated respectfully and on almost every occasion triggered further focused questions, both from the teacher and other children keen to know about the alternative

approaches and solutions employed by their peers. In modeling real interest and in fostering an enquiry based approach to learning, this teacher also encouraged the children’s agency and self determination.

Exemplar 3: Phase 3 - Event recording duration 3 minutes

An episode of event recording from Thomas Coram Early Years Centre suggests that the teacher’s questioning stance is mirrored by the four and five year olds, who, as with the six and seven year olds in the previous exemplar, are evidenced modeling ‘as if’ or ‘possibility thinking’.

1. Child A shows adult bottle full of sand.
2. Adult: *“Is that my drink?”*
3. A shakes head
4. Adult: *“No?”*
5. Child tips up bottle, holds it up until empty ———
6. Adult *“Huh? Well what am I going to do now then?”*
7. A: *“Nothing* B shoveling sand into jug
8. Adult: *“Nothing?”* A smiles. <sandtray: adult>
9. A picks up funnel and bangs it down. B pours sand into bottle using jug.
10. B holds bottle neck and looks into jug (empty)
11. B shovels sand into jug (1 spade load)
12. pours sand from jug into bottle, head on side [piano sounds]
13. glances behind when finished pouring
14. shovels sand into jug (4 loads) from front of tray
15. looks down as sand spills
16. shovels a 5th load from back of tray (?more sand there)
17. pours sand from jug into bottle (bottle now overflowing)
18. lifts jug high up and turns it upside down to empty all the sand

19. lowers upturned jug over bottle and hits top of bottle neck repeatedly, right hand over bottom of jug.
20. Rotates jug and swaps it from right to left hand, holding it by the handle
21. hits bottle with edge of jug. Bottle tilts
22. grabs neck of bottle with right hand
23. bangs bottle top with bottom of jug repeatedly (sand shakes down so that there is space at top of bottle)
24. moves right hand away, tentatively and cupped, from neck of bottle and lets go
25. pulls jug away (left hand)
26. picks up spade and shovels sand onto it
27. lifts loaded spade and moves jug to meet it but misses
28. (sand falls into tray) abandons jug
29. shovels sand directly from spade into bottle (once)
30. loads sand onto spade again. Looks behind [Adult: "*Is that my breakfast?*"]
31. pours sand from spade into bottle
32. looks behind again and pauses [Child A "*Is that her breakfast?*"]
33. turns back to sand tray
34. spades sand into bottle (once) [Adult: "*Is it time for breakfast now? Can I*
35. puts hand over bottle top and pats down, *have my finger (?) back please? I'll give it*
36. looking back over shoulder *back to you in a minute"*]
37. behind: tray> hits bottle top with spade repeatedly >>>>sand tray
38. Child A returns to tray
39. B smiles and waves. Shakes sand off hand
40. B shovels sand into jug and pours into bottle

41. picks up spade
42. hits bottle top with spade (bottle wobbles)
43. B holds bottle with left hand. Continues hitting with spade {Child C arrives}
44. C picks up cone and shovels sand with it
45. C holds up cone and looks inside it B pours sand from jug into bottle
46. C shovels sand with plastic jar, holding cone in left hand ---
47. B holds up bottle full of sand C pulls B's bottle forwards
48. B protests
49. C holds cone up. B pours sand from bottle into cone until full (sand comes out of holes)
50. C lifts cone and tips sand out
51. C holds cone. B fills cone again from sand in bottle
52. C lifts cone towards lips and makes drinking/sipping action (twice)
53. C lifts cone up. >>> sand escaping from holes. Says "*Not again*"
54. Repeats "*not again*" and looks upset
55. C puts cone to lips, tilts it, puts hand under bottom to catch sand and again makes drinking /sipping action
56. tips up cone to empty and moves away from sand tray. [Adult: "*break time everybody*"]

In this episode we witness the teacher posing six questions which make explicit the modeling of possibility (or 'as if') thinking. This is particularly evidenced in two out of five questions (see L2 & L30) where the teacher poses a question about one object 'as if' it were something else. These questions are then followed up by a subsequent question which links to the 'as if' situations set up previously. For example, '*What am I going to do now*' (L6) links the use of the spaded sand as

'*drink*' from the bottle which has been emptied. Similarly, "*Is it time for breakfast now?*" (L34) implies or links the unseen object as if to "*breakfast*".

These question-answer exchanges (L2-8 & L30, 32 & 34), whether indicated verbally or non-verbally, provide evidence of the questioning stance being mirrored by both teacher and child. In L4 the adult mirrors the child's shake of head as 'No' in answer to her question. Conversely, in L8, the teacher mirrors the child's answer of '*nothing*' with the question '*nothing*'?

With child A's (only) question (L32), '*Is that her breakfast now?*' we witness the teacher's mirroring of the child's question to another child, '*Is it time for breakfast now?*' but now posed correctly with the possessive pronoun. What is particularly intriguing about this episode is that child A has moved on from answering to posing questions, as modeled earlier by the adult, to incorporate 'as if' thinking.

This episode makes explicit 'possibility thinking' occurring quite naturally, directly attended to and mirrored between teacher and child as evidenced when child C sips from the cone 'as if' it was a cup (see L52 & L55). Children's engagement and immersion in an activity, or 'as if' space, may be demonstrative of a necessary condition for 'possibility thinking' within creative learning.

REFLECTING ON THE FINDINGS

From these and other exemplars relating to the category of 'posing questions' the focus of questioning, generating ideas through pondering and positing 'what if' scenarios in the mind emerged as a central feature of 'possibility thinking'. Both audible and inaudible questions were documented; many in the latter category were visible in the behaviour of the young learners through close observation and deep knowledge of the children. Reverse questioning on the part

of one teacher was also in evidence and the asking of genuine questions and modeling of genuine enquiry was seen to be common practice and a core element of developing self determination.

In addition, the posing of questions, in an ‘as if’ space, were evidenced through children making connections through prediction, compensation, improvisation and testing. Children’s questions were treated with respect and interest by these professionals and multiple examples were recorded of unusual questions arising. The above exemplars illustrate how the data collected for this study was used to document one element of ‘possibility thinking’ and ways in which posing questions sometimes incorporated ‘as if’ (imaginative) thinking. This highlights the permeability of elements of ‘possibility thinking’. The other six elements of ‘possibility thinking’: play and immersion, self-determination and risk taking, being imaginative and making connections were also evident in all of the classrooms. A discussion of these themes from the perspectives of both learning and pedagogy is reported elsewhere (Craft, Burnard & Grainger, 2005a, 2005b).

Possibility thinking’ re-conceptualised

As well as allowing us to validate ‘posing questions’ as a specific element of ‘possibility thinking’, critical reflection on and detailed analysis of the data allowed us to progressively refine the three-fold, process, process plus outcomes and outcomes structure introduced in Figure 1. It also led us to re-position some features of ‘possibility thinking’. The co-participatory research methodology we adopted allowed the university researchers and teacher researchers to work together to develop new insights about ‘possibility thinking’ that were securely grounded in practice.

During the first stage of close video analysis the research team came to recognize that ‘risk taking’ was involved at different levels and in different ways for individuals in both the process and the outcomes of ‘possibility thinking’, rather than purely as an outcome. We also came to the

view that immersion in activity – or ‘making connections’ - formed an important and missing ingredient in the process of ‘possibility thinking’. These connections are represented in Figure 2. The new mapping represented a move on from the earlier conceptual representation shown in Figure 1 and enabled the team to focus in more closely.

Figure 2 ‘Possibility thinking’ Re-conceptualized

The observations in each context using the ‘possibility thinking’ documentation framework that were carried out during the second and third phase of the study allowed core areas of ‘possibility thinking’ in the context of children’s learning to be identified. These were evidenced in each context and identified by all involved. They included the three aspects of ‘Process’:

- Posing questions
- Play
- Immersion and making connections

They also included three aspects of ‘Process-Outcome’:

- Being imaginative
- Innovation
- Risk taking

On the ‘Outcomes’ side, we found little evidence of the notion of ‘development’ except as implicit within the children’s learning, and the question of taking intentional action was also more problematic the younger the children as so much of what the children were doing was ‘invisible thinking’ until later so that it was only possible over time for a practitioner to surmise that a child might have been taking ‘intentional action’ and even then the question of what we could mean by ‘intentional’ was problematic.

In terms of ‘Process’ and ‘Outcome’, we found the notion of ‘innovation’ problematic, in terms of its relative meaning. What, for example, might be normal activity in one class or setting culture, and therefore for learners within it, might not be for another. Thus, at Hackleton Primary School, after four years of developing creative learning, where children have experienced through siblings, critical events in school (such as the making and burning of medieval London to signify the Great Fire of London), how far is it possible to say that it remains innovative for new pupils?

Through discussions of this kind, the team considered at length, then, not only the extent to which some features were central or otherwise to ‘possibility thinking’, but also whether the second-stage representation of features of ‘possibility thinking’ within the areas of ‘Process’, ‘Process-Outcomes’ and ‘Outcomes’, as described in Figure 2, was a useful distinction.

The separation of ‘Process’ and ‘Outcome’ was not easily evidenced in practice in these early years classrooms and appeared too structured to accurately reflect the fluidity observed, since for example children often took risks as part of the process of moving their thinking forwards and this was not necessarily an ‘Outcome’.

In addition, considerable autonomy and agency (‘self-determination’) was documented in each classroom, evidenced in the process of ‘possibility thinking’ in many cases, and although the degree of this was task-dependent, in general this too could not be confidently assigned as an ‘Outcome’ only. Furthermore the dynamic interplay between teaching and learning needed to be recognized and conceptualized. As a consequence, a new diagrammatic representation was created which reflected more accurately the integration of the creative teaching and learning which appears to foster the development of ‘possibility thinking’ (see Figure 3).

Figure 3 An evidence-based model of ‘Possibility thinking’

The overlapping domains of teaching and learning were set within wider circle which sought to profile the significance of the *enabling context* both in the classroom setting and in the wider school environment. These external and internal enabling factors clearly influenced and surrounded the playful endeavours of teachers and children

FINAL REFLECTIONS

The present study has begun to identify and document *what* constitutes ‘possibility thinking’ in the learning experiences of young children, and *how* teachers foster ‘possibility thinking’ as an aspect of creativity. There are, however, still many issues which the team wishes to examine further, including *when* there are opportunities to develop creativity in the domains of the early years and primary curriculum.

Posing such questions should not be seen as setting an unusual challenge to teachers. In the present study, the researcher-teachers valued the chance to reflect upon their practice, share their insights with others and felt that they had benefited from the opportunity to engage with innovative research techniques which furthered their understanding of ‘possibility thinking’. The opportunity to work collaboratively and consider the consequences of their developing understanding about children’s thinking has prompted them to make more use of the techniques of video-stimulated review and micro event analysis as revealing applications for pedagogic understanding. In documenting the collaborative journey we undertook for this study we also hope that we have demonstrated how researching aspects of their pupils’ thinking and their own practice and reflecting upon the influence this can have upon practice in school offers a very powerful vehicle for teachers to develop their own professional knowledge.

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Table 1: 'Possibility thinking' documentation framework

	Evidence of learning	Evidence of pedagogy
Process		
1.1 Posing questions		
1.2 Play		
1.3 Making connections		
Outcomes		
2.1 Self-determination		
2.2 Action/intention		
2.3 Development		
Outcomes and process		
3.1 Innovation		
3.2 Being imaginative		
3.3 Risk-taking		