Good Question

Arts-based approaches to Collaborative Research with Children and Youth

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CHAPTER 14

WHAT DOES LEARNING LOOK LIKE?

USING CARTOON STORY BOARDS TO INVESTIGATE STUDENT PERCEPTIONS (FROM 4 TO 15) OF LEARNING SOMETHING NEW

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Background

In the United Kingdom there is a growing interest in how we can develop children's metacognitive awareness (Flavell 1979). Studies using meta-analysis have explored the impact of metacognitive pedagogies and show a consistent impact on attainment (Higgins et al. 2013). Therefore approaches such as assessment for learning, thinking skills, self-regulation, habits of mind, dispositions, self-efficacy and self-esteem in relation to learning are all present, to a greater or lesser extent, in the theory, policy and practice rhetoric. Alongside the Teaching and Learning Programme's (TLRP) 'Learning how to Learn' (for example, James et al. 2007), the Learning to Learn in Schools Project was a detailed exploration of this practice in schools (for full details see Wall et al. 2010). Running from 2003 until 2010, involving four regions of England and over 50 institutions including primary, secondary and special schools, this project involved pupils from the age of 4 to 16 years. The project was characterised by a commitment to practitioner enquiry through action research with a priority placed, in the latter phases, on exploring practitioners' interpretations and definitions of 'Learning to Learn' (L2L).

The teachers in their different contexts prioritised time to make the process of learning explicit. This involved sharing understandings and questions about effective learning. The definition of learning to learn developed in the project is:

> Learning to Learn is an approach that focuses on what happens when we learn and how we can learn more effectively. Being involved in L2L means being part of a community of enquiry that aims for a better understanding of the learning process. An L2L approach provides all learners with opportunities and tools for reflective and strategic thinking that generate talk and collaboration. This helps individuals develop skills and dispositions for successful lifelong learning that can build their motivation and enable them to take effective action to fulfil their learning goals.

Over the course of the project, participant teachers indicated that an L2L pupil has awareness of the processes of learning; is psychologically prepared for learning; and is a good communicator (Hall et al. 2006). Associated with this growing appreciation, there was increased consultation with pupils about their experiences of L2L. This reflects a developing trend in the literature about the increased importance of exploring pupil views of learning; however, although studies go some way to considering the complexities of learning, few extend beyond generating more than a snapshot of pupils' understanding (for example Bullock and Muschamp 2006; Black et al. 2006). Indeed within the project we have shown how the dispositions and skills associated with pupil participation can act as a catalyst for the development of metacognition (Wall 2012).

Using visual methods to explore pupil views of learning

When exploring the classrooms across the project we saw communities of learners prepared to share their thinking and question their own and others' assumptions about metacognition in such a way that a shared responsibility and engagement with the process of learning developed (Wall 2012). It is essential that the culture of the classroom community is supportive of this talk since this talk is inherently personal, abstract and complex. It is through creating a supportive environment and an empathetic community that the questioning and hypothesizing about learning experiences can occur. This requires community members to have language, skills, dispositions and values that facilitate articulation and challenge thinking about learning, while also being safe and secure enough for individuals to accept difference and question themselves and others in a constructive way, fitting with Dewey's (1938/1991) concept of democracy.

It is therefore no coincidence that the exploration of learners' views of learning in the L2L project has been closely tied to the rise of pupil voice activities, spurred on by the UN Convention on the Rights of the Child (1989). Within the project, the consensus was a move away from a more consultative standpoint to a participatory one (Hart 1997). Participation is characterised by activities that support the pupils in full engagement, facilitate investment in the outcomes and allow action to take place as a result. These participatory objectives fit well with the ideals of Learning to Learn. Ruddock (2006) stated that it was important to move away from asking 'how'? towards 'why'? It is important to ask for pupils' opinion and this has direct links to ideas around metacognition, which were an explicit part of the project. Teachers want the learners to know not only how they learn (metacognitive knowledge), but also why (metacognitive skillfulness). The distinction is between an awareness of a particular thinking and learning process and an active engagement with that knowledge and with the dispositions and habits of mind which develops the capability to apply it in different contexts and learn both what has worked best and what might work next (Veenman et al. 2005). The project definition articulates that L2L will 'develop skills and dispositions for successful lifelong learning that can build their motivation and enable them to take effective action to fulfil their learning goals': ownership of and participation in this process is central.

Learning to Learn does appear to have acted as a catalyst to the development of pupil participation in project schools: L2L pedagogies match well with the philosophies that underpin pupil participation and developing the two together accentuates the learner outcomes (Wall 2012). The project definition of L2L is based on a view of metacognitive development that is value driven. It suggests an inclusive and democratic process, which prioritises the sharing of ideas, a conversation, with the aim of changing and developing understandings about lifelong learning (Wall et al 2010). These values fit well with those associated with pupil participation (Robinson and Taylor 2007). However, learning is very personal and introspective and the process of making this internal process explicit can be challenging. This makes it difficult to talk about, to find the words and to articulate, for both teachers and pupils. Yet the process of trying to do so seems to alter the dynamics of typical classroom interaction. This can perhaps be attributed to the match in values between L2L and pupil participation. This is where our experiences with visual methods have proved useful.

As pragmatic education researchers, we came to explore the visual dimension when thinking creatively about what could be included as evidence (Matheson 2008) in the project when researching effective learning across all stages of education and particularly when researching young children's perspectives. The repertoire of tools for data collection was particularly limited when the perspectives of young participants were considered (Thompson 2008). As many pedagogic activities in the primary age phase rely on visual outcomes, their inclusion seemed an obvious extension of our research practice. These outcomes could only be included as empirical data when the definition of evidence was widened beyond word-based and numerical as suggested by Eisner (1997). By rethinking outcomes of learning activity and developing shared understandings with practitioners of what could be included as evidence of learner perspectives, we developed new ideas about how visual data could be collected, analysed, validated and reported to support both pedagogic, policy and research needs (Woolner et al. 2010; Wall et al. 2012).

We believe that incorporating the visual into our research repertoire means that we are facilitating voice through a media that does not rely (as much) on literacy levels, and is therefore arguably more inclusive for younger children and those with special needs. We also believe it has the potential to be used across age phases in a way that traditional methods might exclude groups (Gascoine et al. under review). We also believe that using visual structures to mediate a response provides greater accessibility in comparison, for example, with the multiple survey approaches used in schools to

elicit student reflection on their experiences. This makes an honest and thoughtful completion more likely, enhancing ecological validity. When asking about a complex and abstract construct like learning this is even more important. In choosing a task that requires time to complete, for example undertaking a drawing, this nudges respondents from the norm (what is expected of a feedback/voice activity in school) and so aids authentic reflection. Of course the task has to be appropriate to the intent of the researcher (Wall et al. 2012), but to ensure that all learners' voices are heard (and as previously mentioned, we believed that learning to learn is an essentially democratic processes) then finding tasks that allow individual expression of complex ideas is paramount. This chapter will focus on one such way that we tried to do this.

Development of cartoon storyboards

In the past we have used cartoons as a basis for pupil views templates (Wall and Higgins 2006). This visual prompt has been shown to facilitate conversations with pupils about learning (Wall et al. 2007). The visual prompt supports the focus on a specific learning scenario, while the cartoon format, the line drawing, depersonalizes this scenario sufficiently to allow even young children to think around a subject area and contemplate the different perspectives that might be represented in the picture. In addition the use of thought and speech bubbles have facilitated children of all ages in moving from the concrete (what is going on in this learning situation?) to the more abstract (what is going on in these peoples' heads/ what is the learning that is going on?). This has shown that students, even of a remarkably young age, if asked in the right way, can talk about learning and show metacognitive awareness (Wall 2008; Wall et al. 2013).

The templates and their ability to privilege children's perspective on learning have been used and developed in L2L classrooms and have been shown to have the potential to bring adults and children together in reflective and productive discussion across a much wider range of contexts beyond schools and formal learning situations (Higgins et al. 2007). The key idea is that children can be asked, using cartoon representations, to reflect on their thinking about different aspects of their life, including life in school. However the templates presented a single static point in time, whereas learning to learn emphasised the process of learning. We were aware of Galman's (2009) work with graphic novels and how they had been useful in supporting students in developing a flexible narrative: 'to create a performance … a drama of their words' (p.213). So combining these ideas we wanted to explore the extent to which these single image templates could be joined as storyboards that represented a learning trajectory or experience of a learner faced with something new to learn.

Methods

The data collection took place during school visits in the Summer term, 2008. Learners were given a cartoon storyboard template with six frames for the pupils to complete; thus moving from a single learning scenario to a sequence over time. This classic six-box cartoon framework allowed the participant to tell a story with the minimum of framing and explanation, particularly as we emphasised to each group that there was no need to use the template in any particular way. Indeed, within our sample of 210 cartoons, almost every possible permutation was explored: including using only one or two of the six boxes and flipping the template over to use the blank reverse for one or two large images. The majority used all the boxes, either creating a six box story or having three boxes containing pictures with explanatory text in the three boxes below, a format which is frequently used in schools as a narrative task (examples of completed storyboards can be seen below in figure 1).

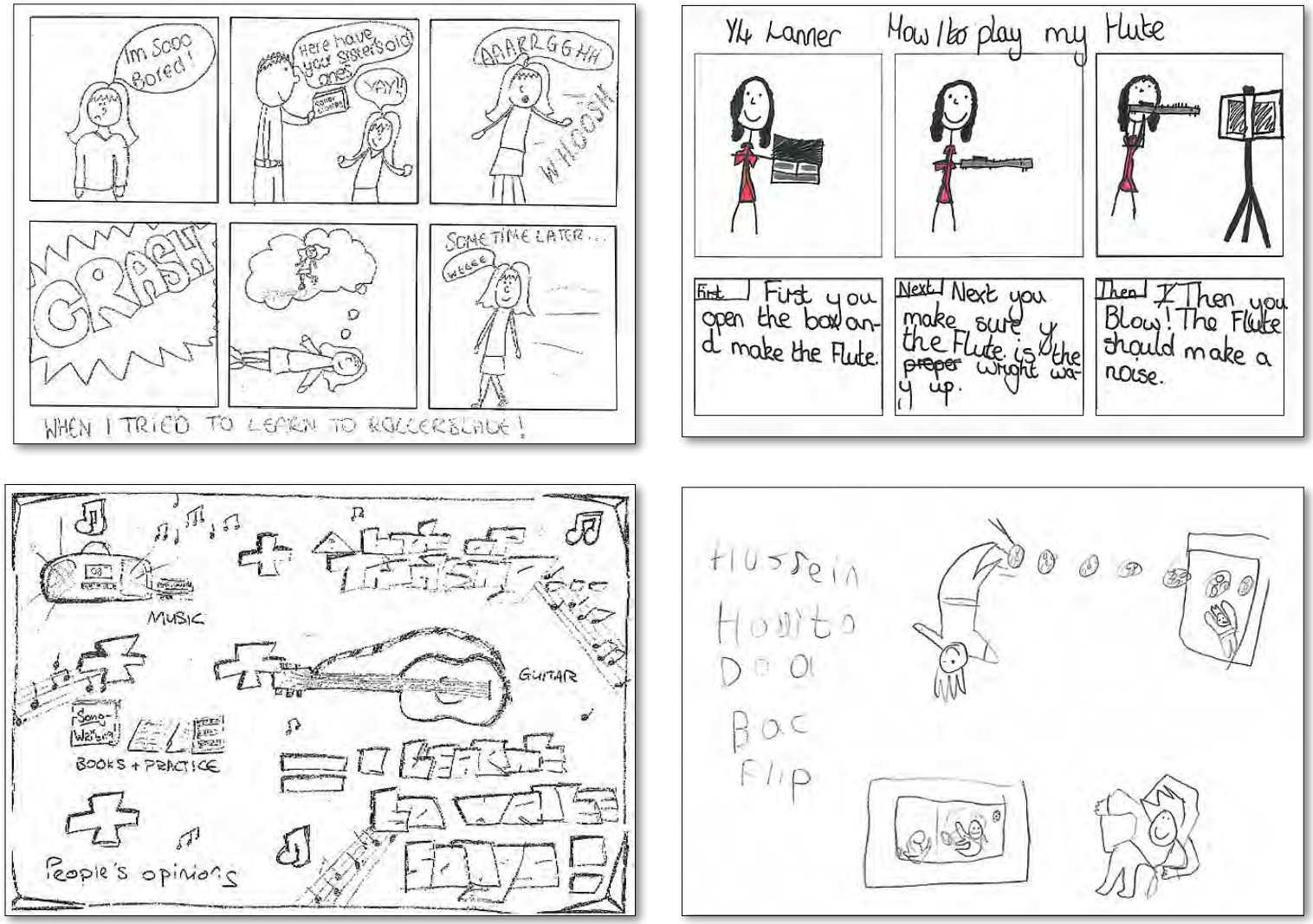

Figure 1: Examples of cartoon storyboards showing different uses of the format

The prompt ‘tell me the story of when you learned something new’ was used. It was made clear that this could be in the recent or distant past and that it could be any kind of learning, at home or at school, learning a skill, some information or something about themselves. The activity was completed by a member of the research team working with a small group (around 5 or 6 learners) withdrawn from the Learning to Learn class, however, sometimes this varied and on occasions we would work with the whole class. This was due to context specific circumstances. This process, and this flexibility of administration paralleled the process used with pupil views templates (Wall and Higgins 2006), as it was dependent on the collaboration of the partner teachers.

All of the participants seemed to understand the semiotic framing of the task and many seemed to relish the opportunity to use it as they chose and to do something different from other students in their group. We introduced the task as a continuation of our research and asked students if they would like to participate – any who chose not to were typically allowed to do other attractive activities such as using the computer. The majority of students were keen to participate and many were interested in our sample size and constituency, wanting to know how old the other participants were and what their schools were like and hypothesising about whether the differences in the size or location of their school might have an effect on the kinds of learning chosen.

Analysis

We collected 212 completed storyboards from a range of schools and age groups; the end sample includes storyboards from learners ranging from 5-16 years old. The sample had a fairly even gender split apart from the very oldest cohort, which comprised a single sex class (table 1).

When it came to analysis we were faced with many challenges. The storyboard structure had proved a very successful way of collecting data. It had been an accessible and inclusive strategy for most respondents and that produced a lot of storyboards from a wide age range. In addition to quantity, when we looked at each individual piece then there was obvious complexity there as well. This included not only the drawn images as data (most visual analysis textbooks focus on photos and videos: Prosser 1998), but also each representation was affected by the individual's skill and ability to represent their perspective and this included artistic quirks (all of which certainly had some relationship to age: Machón 2013). In addition the combination of words and pictures (in most, but not all of the storyboards), as well as the relationship of images to each other (in the majority) to represent change over time increased the complexity of analysis. The range of possible coding and interpretation, given the quantity and quality represented in the data set, was overwhelming.

School	N	Year group	Male	Female
Marlborough	28	1	14	14
Hipsburn	8	1	5	3
Packmoor	6	2	3	3
Hazelbury Infants	8	2	5	3
St Meriadoc	23	2	11	13
Hipsburn	15	2	7	8
Lanner	7	3	5	2
Lavender	6	4	3	3
Lanner	5	4	2	3
Wooler	21	4	12	9
Eastfield	7	5	2	5
Lavender	3	5	2	1
Oakthorpe	8	6	2	6
Carterhatch	12	6	6	6
Lavender	3	6	1	2
Treloweth	6	6	3	3
Richard Lander	3	7	2	1
Tytherington	8	8	4	4
Richard Lander	4	8	1	3
Fallibroome	10	9	3	7
Camborne	6	9	5	1
Duchess	13	10	0	13
TOTAL	**210**		**98**	**113**

Table 1: Sample characteristics for cartoon data collection (see acknowledgements for our rationale in naming participant schools)

The richness of the data could have been suitable for analysis using immersive approaches traditionally associated with grounded theory, but we were faced with the problem of how to deal with the extent of the data set. The practicalities of using in-depth qualitative analysis techniques on a sample of 210 complex sources appeared unrealistic (Wall et al. 2012). However a more quantitative approach, counting patterns and themes, and exploring the relationship of dependent to independent variables (Bock et al. 2011) also felt inappropriate as a single approach. The children had taken real care and time to represent their thinking and learning experiences and this meant we felt it important

to not just pass over, or miss out, the individual nature of the stories. To follow either of these approaches on their own did not feel satisfactory in representing the sample we had collected. Therefore we decided to develop a mixed method frame for the analysis that drew on both qualitative and quantitative traditions (Wall et al. 2013).

The analysis had an overarching iterative process and comprised three complementary phases (described in the next section). The first level analysis was completed independently and created initial thematic categories emergent from the data using frequency counts agreed as broad 'clumps' by the research team and tested for inter-rater reliability and reported in the project annual report (Wall et al. 2009). This stage aimed to identify the overarching themes across schools and across individuals to gain a picture of the data set as a whole. It drew on the tradition of content analysis used in media studies aiming to make generalisations across data sets (Bell 2001) and as Bock et al. (2011) comment has a tradition of being used to generate quantitative summaries of visual data sets. This analysis aimed to answer issues such as:

- How do learning to learn students view the process of learning?
- What were the contexts students focused on when talking about learning? How represented was school learning?
- Are there age /gender/school related trends to this understanding of process?

The second stage was a process much more related to a grounded theory approach (Glaser and Strauss 1967) of construct generation. This stage aimed to support an open exploration of the breadth and depth represented by the storyboards. This stage involved multiple readings of the data to explore the emerging themes. It aimed to look at the bigger picture as well as the detail of each theme as exemplified in the different embedded cases. The researcher who led on stage 2 was not told the outcomes of stage 1, as we wanted her analysis to be driven by the text as much as possible (in line with grounded theory). She was an experienced teacher who had implemented thinking skills strategies in her own classroom and she did have experience of analysing pupil views templates, which will have influenced her approach (Wall 2008). The interpretations from both stages were later validated by the team and as such formed a third stage of the iterative analysis approach used. This stage interrogated trends across both previous analyses, particularly focusing on the variable of age, and allowed us to draw more confident conclusions about the data set.

Results and discussion

Stage 1: Frequency counts and emerging trends

A small number of cartoons had a number of different and unrelated learning experiences (categorised as 'multiple') but the majority had a single clear theme (figure 2). This is not to say that stories of sporting or school learning did not have emotional or metacognitive elements and as our analysis develops, this dimension will be discussed.

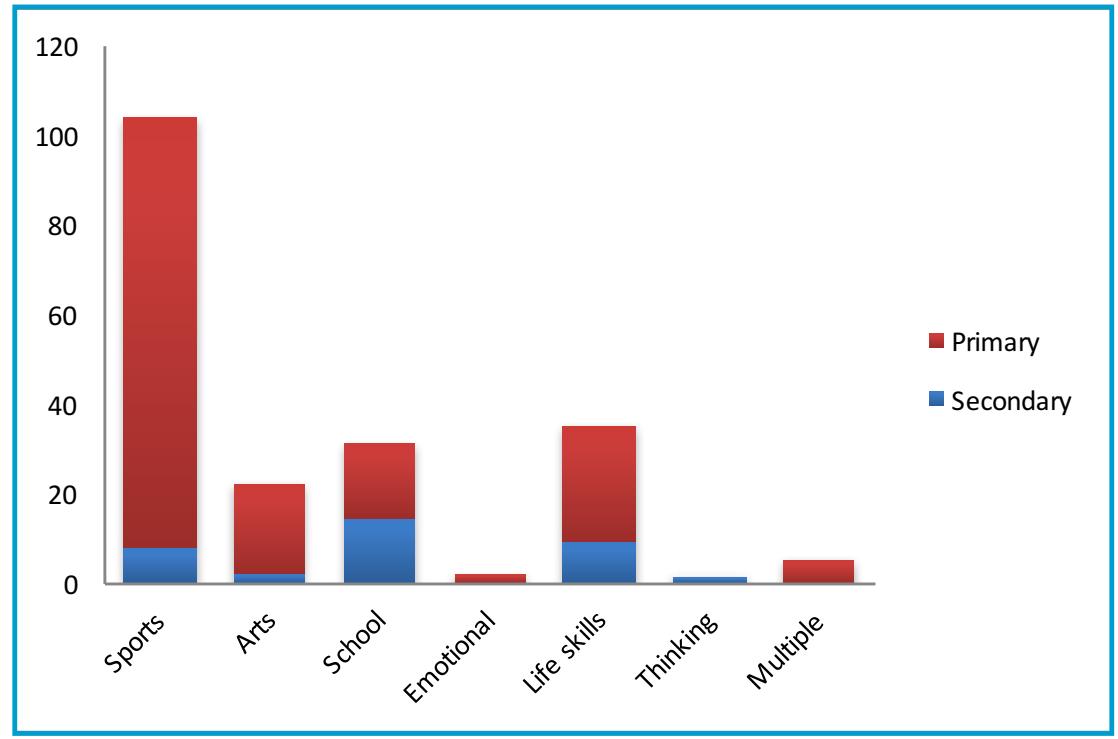

Figure 2: Graph showing dominant themes from cartoons

Overwhelmingly, responses refer to learning how to master specific skills, principally sporting skills. These include football (for example figure 3), rugby, racing and swimming (regional variations are evident: both Northumberland and Cornwall students are more likely to have learned to surf!). Students have learned to play musical instruments, to dance and to draw and they have learned to master school-based skills like reading, writing and basic maths. A cohort chose to relate their learning of life skills – mostly pertaining to preparing food – and a couple of much smaller groups focused on their awareness of their own thinking or their emotional awareness, for example overcoming shyness.

Figure 3: Example of a cartoon produced by a primary age pupil focusing on learning in sport

Primary aged participants were less likely to focus on school-based learning, an outcome that is probably influenced by the fact that the secondary participants were more likely to be students engaged in research into learning experiences in their schools, either as an integrated part of their learning to learn experience or in a more formalised student researcher group (as in Camborne and Fallibroome, for example). In this initial analysis the emotional element was identified for primary aged participants and the metacognitive content for secondary. Additionally there were some gender differences (see figure 4): two thirds of boys and just under half of girls focused on sport and girls were much more likely to focus on artistic or life skills.

Our understanding of learning in the project is that it has an important socially constructed element: “People can think for themselves but not by themselves” (an enlightenment aphorism often quoted by Stenhouse 1975). In our first level analysis we have therefore looked for the role of others in the stories of learning and while there is a large group who have focused on their individual learning, many have included other characters in their accounts, as table 2 indicates. These others are most often family members (n=37) and teachers (n=18), though friends and other adults also feature, as do external events like the weather and in a minority of cartoons the participation of others was unclear. While the majority of interactions produce positive learning effects, occasionally mothers (n=2) and teachers (n=4) are portrayed as having a negative impact on learning.

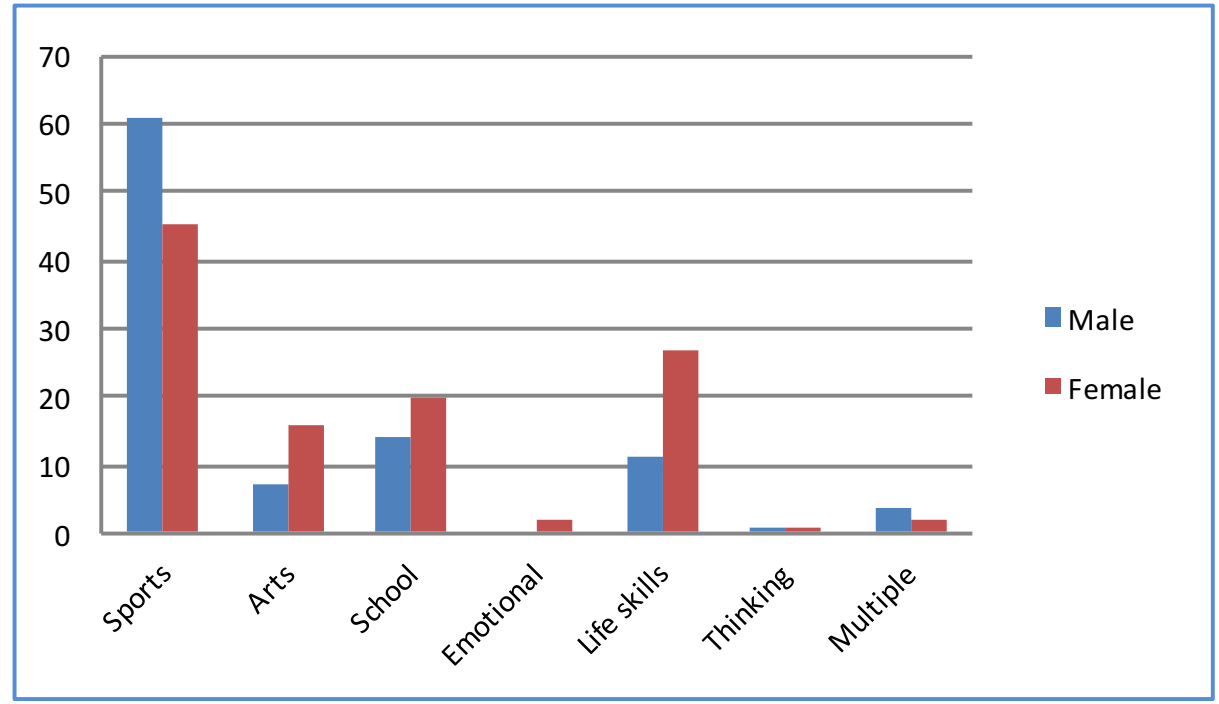

Figure 4: Graph showing cartoon themes clustered by gender

Who interacts?	n	positive impact	negative impact	neutral impact
external events	9			9
self	119	115	4	
others	78	72	6	
unknown	4			4
Total	210	187	10	13

Table 2: Table showing first level analysis of cartoons

Stage 2: Construct generation

This second analysis corroborated the first in focusing on the range of narratives expressed and the number that occurred outside of school and the importance of the adult in supporting learning. However the second researcher also noted that there were other sources of information/expertise that helped in learning a task (for example, learning from the television or a book). This need for support, or additional resources, was apparent whether the learning was pictured in or outside of school. This fits with ideas around 5R disposition of resourcefulness that was promoted in the project.

Pupils were noted as predominantly showing they learned through experience and by trial and error. A common thread, therefore, to the narratives was the story of how learners triumphed over adversity and why repeated attempts were needed before the desired outcome was achieved. An example of this kind of tale can be seen in figure 5. There was some variety in the extent to which the learners identified the specific stages of the learning process. In some storyboards there were just three stages to the process: I couldn't do it, I tried/practiced, I could do it. In other examples, the progression was more elaborate and incorporated more stages with, in some cases, the explicit representation of time passing, for example school year groups or ages. It would be interesting to do the same task with a single line of boxes to be completed by the students; the extent to which the sequence of three influenced this finding needs to be explored. It is important to ask whether the number of narratives representing learning outside of school is representative of the fact that the learning had distinct phases and an obvious goal, for example, when learning to ride a bike it is clear whether you can or cannot do it. It seemed that

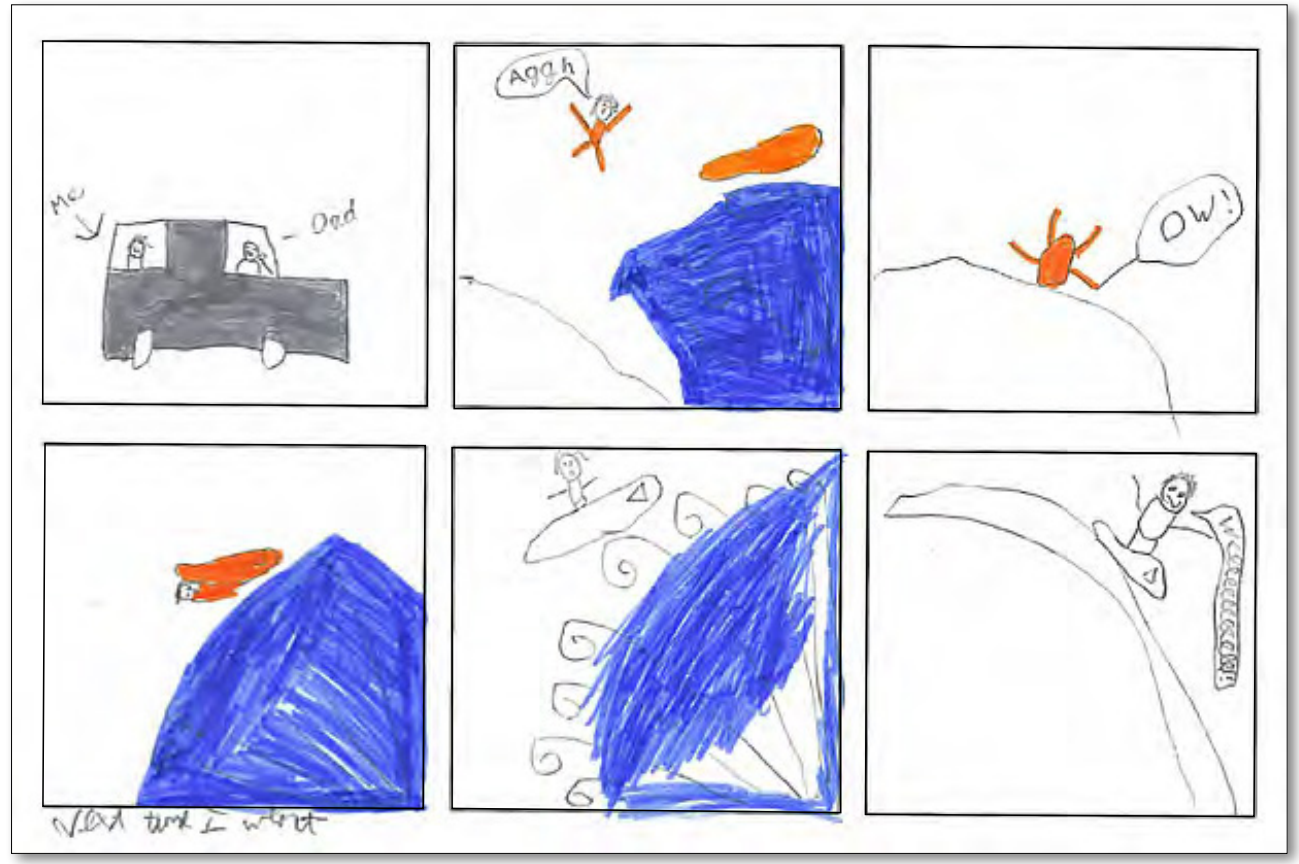

Figure 5: Learning to surf (in Cornwall) by trial and error

the children liked these clear markers of success and perhaps school learning is not demarcated in the same way, maybe it needs to be: is this something that becomes clearer or that we become more accepting of with age?

In the storyboards that elaborated the process of learning it was noted that there was evidence of learners devising new strategies, of learning new skills, to help overcome the challenge of learning this new thing. These new skills tended not to be physical but rather were cognitive in nature. This could be overcoming an emotional reaction, for example, fear or lack of confidence, using feedback (positive and negative) productively or persevering against the odds. The fact that the children were able to articulate and express this process shows evidence of metacognitive skilfulness and is indicative of the learning to learn definition established in the project.

Figure 6. An example of self talk

The importance of 'self talk' and speech bubbles in the cartoons became apparent in this analysis. It was interesting to explore who was speaking and how this influenced the learning story being told: were there patterns in the types of task and who was speaking? How important was the self-talk? Does the age of the pupil influence who speaks and why? The predominance of self-talk was characterised as 'self-motivating' or, fitting in with one of the other 5Rs in the project, 'resilience'. In addition this was often used as a way of recognising the difficulty of the task being undertaken. Many of the cartoons begin with an explicitly stated problem or dilemma. This is then further established by the extent to which the learner struggled to overcome the issue and is seen saying things like 'keep going', 'I can do it' and 'better do it again' (for example, figure 6). They were shown to be happy to admit, in speech bubbles to other people, that they didn't know or were finding a task difficult, but they were also jubilant when they succeeded in achieving their goals. As with the pupil views templates, the cartoon conventions of the speech and thought bubbles allowed the students to express and represent metacognitive processes easily. The overwhelming message in these storyboards was that learning is difficult and fraught with challenges, regardless of how small or simple the learning scenario might be, but that this hard work is worth it in terms of the final achievement.

Stage 3: combining the analyses

From both initial analysis stages the variable of age emerged as potentially significant and there were also some suggestions about gender. This third stage therefore aimed to explore these associations more fully. Three age group categories were used in this analysis, approximately fitting with the key stages 1 and 2 used in English schools, Key stage 1 (5-7 years) and key stage 2 (8-11 years), and a further category representing secondary school (12+ years). These categories were relatively equal in size. The storyboards were labelled with the appropriate age group and also gender.

We explored whether age influenced who the learners sought to support their learning (figure 7). Age was defined by the categories above. We found that the incidence of friends being the main support increased with age. This could be related to the fact that the focus on the learner as an individual, on their own facing the world, also changed as the learners got older. Neither association was significant when explored using a chi-squared (χ^2) test. However, analysis exploring age and the use of self-talk tends to confirm the idea of younger learners being more individualistic. The number of cartoons where only the learner speaks in the speech bubbles decreases as the learners got older. There also seemed to be a pattern linking the gender of the cartoon author and whether or not family/carer or teacher were involved in helping with the learning process, although this pattern was not found to be statistically significant.

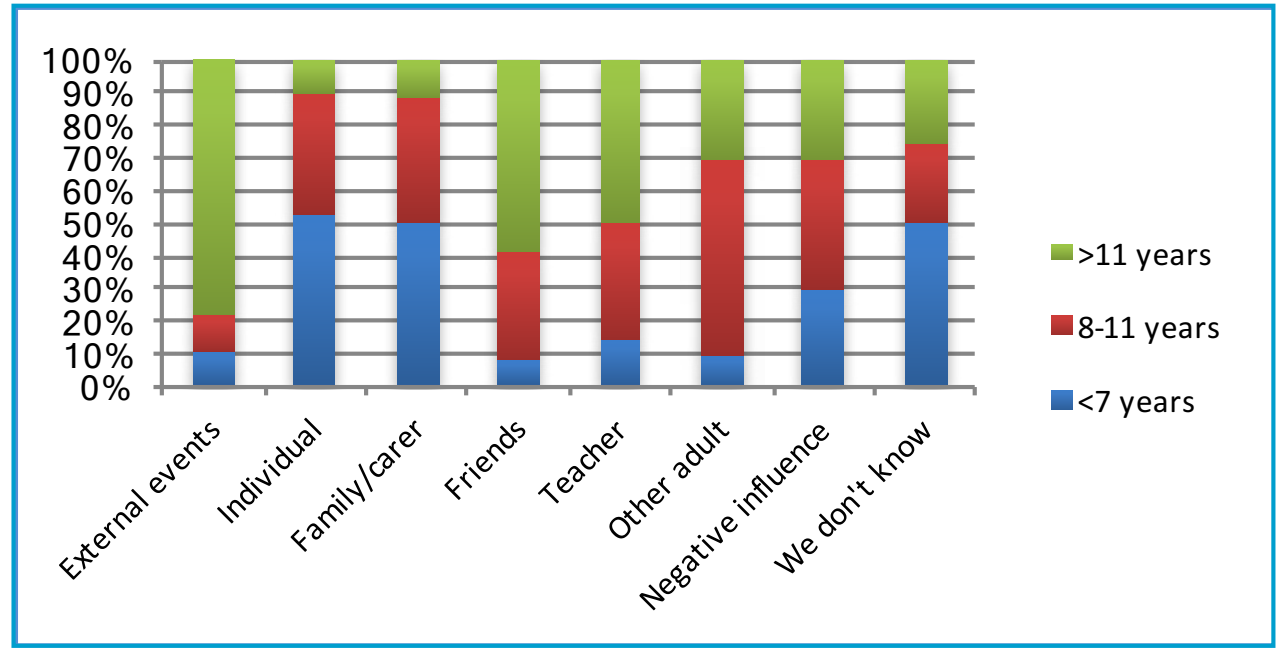

Figure 7: Who helps with the learning?

We wanted to explore the extent to which age influenced the way that the students talked about learning to learn. Results showed an increase in productive thinking, the ability to generalise, to be creative and extend thinking beyond the current context. This shift to more significant thinking is what might be expected with age, and is certainly found in the literature (see, for example, Veenman and Spaans 2005). When we explored the templates for examples of metacognition then the number of instances were relatively low and so findings are inconclusive. An overview of the templates shows that while the majority of storyboards focus on a learning narrative, then the actual expression of learning is implicit rather than being explicitly articulated. So, as the two templates below show, it is possible to infer that confident and articulate learners have produced them, but when looking explicitly for examples of metacognition, it is not present. So, in the example, 'How I learned to face my fears', the subject area is quite sophisticated (and goes against the norm for the data set as a whole) as a response to the prompt of 'tell us the story of when you learned something new', yet the learning narrative is relatively simple: experience what you are scared of and you will learn it is not so bad after all. It is productive thought, but there is no evidence of thinking about that learning process. In the second example, learning to ride my bike, the child has shown significant skill to persevere and find different people to help her with the learning process, but the actual metacognition that underpins this process is not reported.

Figure 8: Implicitly complex learning narratives with little explicit mention of metacognition

We wonder whether the nature of the media, the cartoon storyboard with its implicit narrative structure, meant that the students did not have the same prompt to reflect on their thinking and therefore demonstrate metacognitive awareness. The openness of the storyboard task, for both visual and textual elements, could have impacted on and limited this aspect of the data.

As the age of the students increased more of the cartoons included text as integral elements to the storyboard, as labels or speech bubbles, or indeed they included no text at all, although this relationship was not found to be significant. This trend might suggest, and looking at the cartoons provides further evidence, that the cartoons became more sophisticated and clearer in terms of the diagrams/pictures as the pupils became older. Figure 9 shows this with examples across the age range. Perhaps because the diagrams are clearer (for older, more skilled, artists) the need for text to explain the learning event decreases. A significant relationship between the age of the cartoon author and the format of the cartoon was found. The younger pupils showed more examples of storyboards that used three boxes with continuous text underneath. This appears to confirm the finding above. The task of producing these storyboards was obviously quite challenging for some of the respondents, particularly the younger children, and so they needed to find ways to get their ideas and point of view across clearly: the medium is influencing the nature of the response.

<7 years **Text additional to the cartoon narrative - explanatory**

8-11 years **Text included in the cartoon storyboard - integrated**

>11 years **Drawn narrative clear and so minimal text - supplementary**

Figure 9: Developmental trends in storyboard completion

Finally we explored patterns in the themes of the stories. Only pupils from primary schools produced narratives that were based on multiple learning events, again this could link to previous observations regarding the sophistication of the cartoons increasing with age and therefore the focus being more specific (figure 10). Crosstabs and χ^2 tests showed there were significant relationships. 'Sport' was the more frequent in the younger age groups and that 'school' and 'thinking' were more frequent for secondary school students.

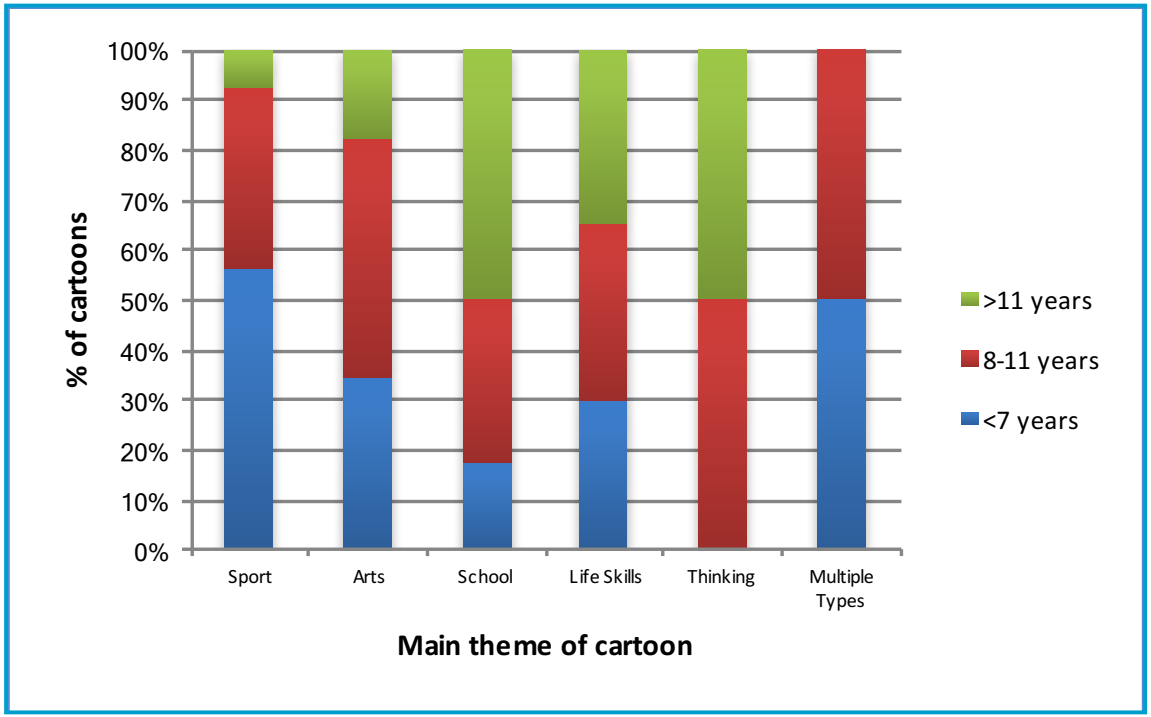

Figure 10: Focus of storyboards and the relationship with age

Conclusions

The storyboard method worked well at generating a depth and range of data that complemented other processes used in the Learning to Learn project (Wall et al. 2010). The data collection tool was sufficiently engaging and inclusive to achieve responses from a sample including children from 4 to 16 year olds (the full compulsory schooling sector in England), something that is relatively rare (Gascoine et al. under review). The completion of the storyboard was well received as an activity by the children and certainly engaged groups in productive conversations about their learning experiences. The structure allowed enough freedom for the students to express their own understandings and opinions about their learning, while also providing some commonality around the cartoon format of sequenced drawings and speech bubbles for themes to emerge.

The overall finding is that the pupils involved in the project see learning as hard work, but rewarding when a task is achieved and their learning is successful. A clarity of process was shown in the storyboards, although the complexity and ability to express develops with age and is influenced the storyboard medium. The learners commonly tell a narrative that emphasises trepidation at approaching a new piece of learning, involves some failure and the need to persevere, but also reflects strong feelings of achievement and accomplishment when reaching their goal. The evidence has relevance to the definition of learning to learn and also to the 5R disposition framework used in the project (Wall et al. 2009): the storyboards provide good examples of learners being resilient, resourceful, responsible, ready and reflective in their learning. The evidence provided useful insight about how the pupils perceive L2L philosophies in their classrooms and also provides some useful pointers as to how we could approach learning, and particularly, metacognition in the classroom.

The development and changes observed in the storyboard data depending on the age of the respondent was also an interesting angle to explore. The patterns observed from a learning to learn perspective are somewhat masked by methodological issues. It is interesting that the majority of storyboards did not focus on school learning. This was especially surprising when considering that the storyboards were completed as part of a school-based task in a school setting. This does reflect project ideals that learning should be lifelong and life wide, but it also raises questions about the way in which we identify progress, learning and achievement in schools. Sporting development, for example, has easily identifiable stages and therefore has potentially a better fit with the partitioning inherent in the storyboard structure. The children can arguably easily picture what someone without the sporting ability or skill looks like, how they practice to get better and then what success looks like. It is visible and measurable. This means we need to ask whether school learning has similarly easily identifiable stages and how we show learning skill as distinct and achievable. Could school be such a long-haul process, with long-term goals (especially for primary children), that the feeling at the start is daunting and the success at the end feels a long way off. It may also be that the choice of focus indicates that students value their out of school learning experiences more than those in school. This in itself demands further exploration.

The analysis has had to be somewhat reactive to the nature of the data in the storyboards but the iterative process, using complementary techniques drawing from both qualitative and quantitative traditions, has worked well in gaining insight into this large, complex data set. To have relied on one process rather than another would have been, we feel, inappropriate to the data, providing one way of seeing rather than a perspective that recognised the complexity. Following Onwuegbuzie et al.'s (2007) assertion that mixed methods research is about the whole research process, not just collecting multiple data sets, but also analysis procedures, then this paper has shown how a mixed methods analytic frame can provide a more comprehensive view of a dataset: particularly a large sample of complex data (Wall et al. 2012). The complentarity of the different processes means that the process became manageable and the different stages have supported a coherent overview of the emerging findings.

As an extension to the method of the pupil views template (PVT), the storyboard technique has shown itself to have advantages and disadvantages compared with the original technique. It successfully enabled learners to relate the narratives surrounding a learning process; as theorised beforehand we have been able to move from a static learning scenario to one that reflects the learning process and descriptions of change over time. These narratives have been useful in generating understanding of how learners perceive the process of learning, how they understand the way that they set about achieving some new learning and how, as they get older, this develops. However changing the PVTs in this way has also meant that the complexity of what we are asking learners to undertake has increased and the focus has changed from talking and thinking to a narrative description. This has had implications for the level of challenge of the method particularly it would seem, for younger learners. This is apparent when we focus on the metacognitive data. The lack of evidence for meta-cognitive thinking is disappointing considering the successes we have had with PVTs previously; there were few comments in the storyboards meeting the coding scheme criteria we have used previously (Wall 2008). The thought and speech bubbles had been shown to work well in structuring the articulation of meta-cognitive thinking. Perhaps an approach that directs the learners to include thought and speech bubbles within the storyboards could be helpful in emphasising the importance of this information. It may also be the case that storyboards are not the right structure for exploring this facet of learning.

We have theorised about the importance of the visual prompt provided by the image and the thought and speech bubbles in the PVTs in scaffolding the response of the learner (Wall and Higgins 2006). The comic book style that we used in the templates transferred well into the context of the storyboard in terms of understanding the narrative aspects of the task, but the lack of further visual clues made the nature of the task very open (any learning scenario, any structure, any type of learning). Therefore the nature of the data produced is equally open (not just in its format, text and visual rather than just text; but also in its breadth). In the future we would suggest that the storyboards be used in a more structured way. By adding further visual prompts such as speech and thought bubbles or cartoon people (like those used in the PVTs) then we might have focussed on metacognitive responses. Indeed, now that we know children find it hard to tell narratives about learning in school then

maybe we should have drawn out a school learning scenario and asked them to complete a sequence of thought and speech bubbles; this may have elicited richer metacognitive skilfulness as each speech and thought bubble is written in relation to the preceding one. Further research into this approach is needed. Overall what our work in this area indicates is that visual approaches are valuable in engaging young people and supporting their effective participation in research about their learning. However the specific design of the visual structure used to scaffold their participation needs careful thought in relation to the research aims and what the specific structure prompts and enables.

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