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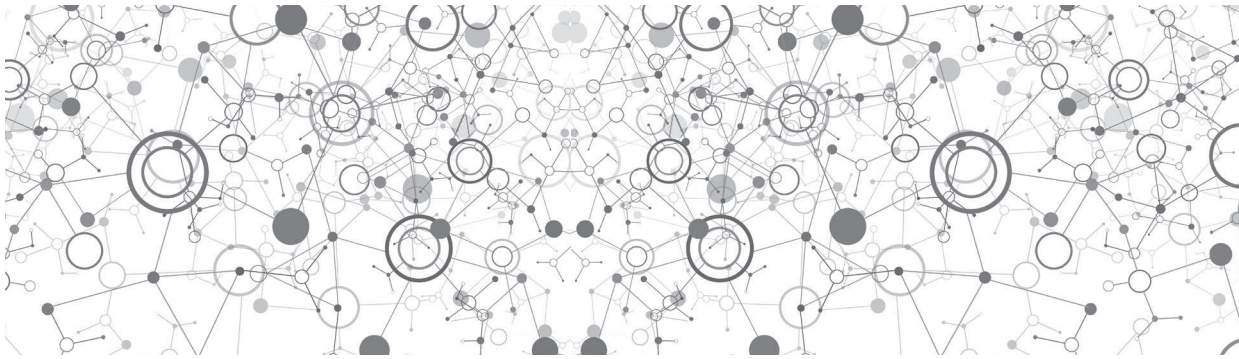

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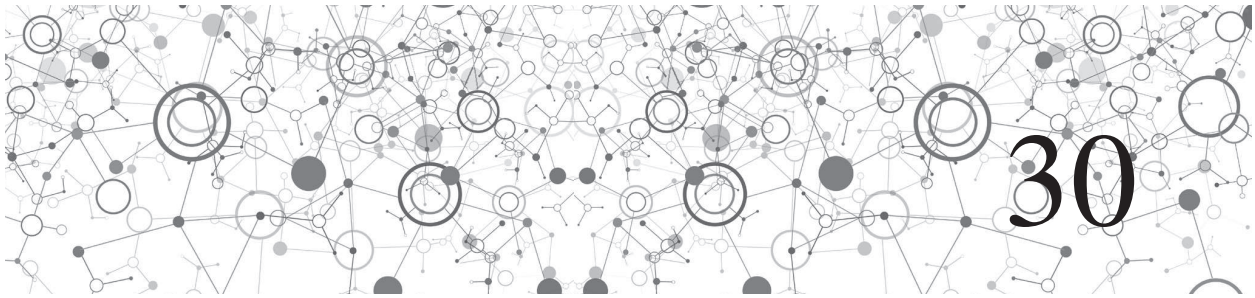

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Meta-Learning in Classrooms

Chris Watkins

INTRODUCTION

I was talking with four 10-year-old students in a school in an underprivileged part of Sheffield about their experiences of learning in classrooms when one of them said that they 'distill' their lessons. After asking them for some explanation, I asked whether they could distil our conversation so far. 'Yes', they said, and, as they turned to discuss it in pairs, I heard one use the word, meta-learning. When the paired conversation ended I enquired: 'Did I hear you use the word meta-learning?'; 'Yes'; 'What's that? Metal-earning?'; 'Nothing to do with metal'; 'Knowing yourself as a learner – which is a good thing'.[1] That conversation and that 10-year-old represent what I hope to illuminate in this chapter.

THE CLASSROOM CONTEXT

Social psychology has demonstrated that human behaviour is closely linked to the context in which it occurs, so it is important to consider the context of the classroom and the way it can influence this topic. One of the most curious things about classrooms is how little they focus on learning. Since classrooms appeared on this planet 5,000 years ago they have been characterised by teacher-driven activity systems. The relationship is one where the teacher initiates, the pupils respond and the teacher evaluates: the most compressed example is still recognisable: 'Six sixes?'; 'Thirty-six'; 'Good girl'. This is known as the Initiation-Response-Evaluation cycle and research of the last fifty years continues to find it as the dominant pattern in current classrooms (Bellack et al., 1966; Cazden, 2001).

The effect of this is that learners' experiences as learners are hidden. After four decades of studies of classroom learning issues using hidden microphones and video cameras, Nuthall's final (2007) book was given the title *The Hidden Lives of Learners*. He had summarised this earlier as: '[w]hether a student learns or not reflects the students' understanding of classroom tasks, management of social

relationships, and the extent to which the student shares the cultural understandings and background knowledge of the teacher and other students' (Nuthall, 1999: 213). Another curious thing about classrooms is how much they stay the same. Despite changes in rhetoric over decades and centuries, the dominant patterns return. Even across the varying national cultures of our world, patterns of classroom interaction are so similar that a video study found no one country was different on all the aspects observed (Hiebert, et al., 2003).

Some analysts of classroom and school culture point to a connection between these two curious elements. As Sarason puts it (2004: 43), '[y]our conception of the learning process not only has enormous implications for classroom learning contexts but also goes a long way to explaining why educational reforms, resting as they do on a superficial conception of learning, will continue to be disappointing'. These two features of classrooms need to be understood and talked about as part of any development of more learning-centred classrooms (see also Watkins, 2015).

CONCEPTIONS OF LEARNING AND META-LEARNING

The way in which learning is talked about (or not) is important and may reflect different underlying conceptions of learning. These in turn may have implications for the focus of this chapter. Conceptions will be considered in three areas: in the academic literature, in learners' minds, and in classrooms. Interactions and influences between the three will be noted.

Some academic conceptions of learning have no concept of meta-learning, for example, a behaviourist model does not pay attention to the learner's awareness at all so has no need of a concept of meta-learning. The term *metacognition* came to prominence after Flavell's (1976) introduction. He had been influenced by Piaget and constructivist views of learning, and at a similar time Sternberg (1977) had been reclaiming the notion of intelligence by emphasising meta-components. In Flavell's (1976: 232) terms, '[m]etacognition refers to one's knowledge concerning one's own cognitive processes and products or anything related to them'. He went on to suggest that: '[m]etacognition refers, among other things, to the active monitoring and consequent regulation and orchestration of these processes in relation to the cognitive objects or units on which they bear, usually in the service of some concrete goal or objective'. So it is a form of knowledge, and at this stage the connection between monitoring and regulation seems to be assumed, without clarifying what forms of monitoring lead to self-regulation.

Flavell also mentioned – in passing – meta-memory and meta-learning. Soon after this, Brown (1978) observed that the proliferation of *metas* in the literature might suggest that this was an epiphenomenon. She clarified that taking a perspective on one's own activity (knowledge, memory, learning) is crucial for developing conscious control in such activities as deliberate learning and problem-solving. That phrase *taking a perspective* is an important one in understanding meta processes, and relates to everyday phrases such as *step back*, *view from above*, *take another perspective*, *look back over*, all of which imply the possibility of viewing our activity from a stance other than being solely involved in it.

Soon, reviews of the metacognitive instructional literature showed 'a substantial effect' (Haller et al., 1988: 5) on reading. Importantly the title of that review was *Can Comprehension Be Taught?* Here already were signs that the dominant classroom view of learning was influencing the approach to research and development. Work on metacognition soon became confounded with work on study skills, but later meta-analyses demonstrated again that these might have again fallen prey to the dominant teaching model. It became clear that learners may possess learning strategies, but not employ them, or employ them ineffectively. So it is the process of selection and use that comes to the fore. This is where the metacognitive strategies

of monitoring and reviewing are vital: indeed Hattie's review (Hattie et al., 1996) concluded that direct teaching of study skills to students without attention to reflective, metacognitive development may well be pointless.

Gradually researchers came to identify

> [the] problem of [learners'] understanding: they had little insight into their own ability to learn intentionally: they lacked reflection. Children do not use a whole variety of learning strategies because they do not know much about the art of learning. … Furthermore, they know little about monitoring their own activities; that is, they do not think to plan, orchestrate, oversee, or revise their own learning efforts. (Brown, 1997: 400)

Here the thinking relates directly to the developing understanding of the self-regulating learner. Indeed one of its main architects defined this area of direct inclusion of metacognition: '[i]n general, students can be described as self-regulated to the degree that they are metacognitively, motivationally, and behaviorally active participants in their own learning process' (Zimmerman, 1989: 329). More recently the skills have been called *self-managing*, *self-monitoring* and *self-modifying* (Costa, 2004: 6).

A range of studies have demonstrated a relation between metacognition, self-regulation and school performance, in one case showing that 'different areas of self-regulation could explain 34% of variance of school performance in the primary school, about 21% in the secondary school and nearly 14% in the university education' (Vukman and Licardo, 2010: 267). This is one of the largest effects from a single variable, yet it is a variable that is mostly hidden in the lives of classrooms, but it is having a significant effect. Those learners who learn self-regulation from other contexts of their lives are the ones who succeed in teacher-driven systems.

The first academic texts where the title used the term meta-learning were both research degrees completed by teachers – in Toronto (Maudsley, 1979) and London (Jones, 1983). Novak (1983) used the term, but Biggs (1985: 204) is most often cited as the origin, with his 'being aware of and taking control of one's own learning'. Again the connection between awareness and control seems to be assumed.

LEARNERS' CONCEPTIONS OF LEARNING

While the idea of metacognition was developing as a key element in a richer conceptual model of learning, some researchers began to focus on the view of learning held by children themselves. The pioneering work of Pramling (1983) showed that young children from 3 to 8 years showed a developmental progression in their view of learning, from learning to do, to know, and to understand. She went on to research classroom interventions with 5-year-olds and showed their conceptions were developed through *metacognitive dialogues* as a continuous feature in the classroom (since the focus was their learning experiences, these may have rightly been called *meta-learning dialogues*). 'This development did not occur as a consequence of training any general strategies, but as a consequence of changing perspective' (Pramling, 1988: 277).

Studies across a range of ages of learners often distinguish conceptions of learning: increasing one's knowledge; memorising and reproducing; applying; understanding; seeing something in a different way; or changing as a person, i.e. seeing oneself in a different way (Marton et al., 1993). Although researchers may identify such differences, learners themselves do not always experience the school experience which helps them do the same: by the age of 14 or 15 pupils have been reported to have no clear understanding of how they learn (Berry and Sahlberg, 1996).

A learner's conception of learning affects how s/he goes about learning: quantitative conceptions (the earlier ones in the list above) are related to superficial approaches rather than a focus on understanding. This distinction was also described as 'surface versus deep' views of learning, and shown to be significantly related to how learners operate in classrooms (Dart et al., 2000). More recently

another conception of learning as duty has been added (Purdie and Hattie, 2002), with findings such as '[t]he conception that learning is a duty predicted lower achievement and the conception of learning as continuous predicted higher achievement' (Peterson et al., 2010: 167). There is little research on learners' conceptions of meta-learning, but, even at higher education level, attempts to develop richer conceptions of learning have had to face the challenge of those students who did not see any value in reflecting on learning, and those who saw learning as bound by fixed ability rather than learner agency (Connolly and Ward, 2011).

CLASSROOM CONCEPTIONS

In the classroom, conceptions of learning are dominated by teaching. This can be described as *Learning = Being Taught*, whereas richer conceptions of learning would be *Learning = Individual Sense-Making* and *Learning is Building Knowledge as part of doing things with Others* (L = BT, L = IS, L = BKO; Watkins, 2003: 10–16). In the academic literature these are instruction, construction and co-construction, and relate closely to research on teachers' conceptions of learning: transmission, transaction and transformation (Brody et al., 1991: 3).

The implications for learners are that children point to the teacher as being responsible for their learning. As one student put it: 'I learn because people tell me', and a headteacher suggested that: 'Learning is something you do to children' (Lodge, 2002: 27). Yet research has shown that some classrooms do develop a learning orientation, and that the key influence is the way the teacher talks about learning, as an active process that requires student involvement and discussion; that understanding, rather than memorisation and replication, is important; and that interaction is a key feature (Patrick et al., 2001). But the teacher's role in highlighting learning is necessary but not sufficient. It has been shown that if teachers highlight learning as a construction in their classes, some students become increasingly metacognitive and report evidence of revision of their learning processes. Others report little or no effect (Thomas and McRobbie, 2001). This result fits with many others which show that teacher-driven changes to classrooms can have divisive results, and requires us to think through what else is necessary for a real change in the culture of the classroom. How, with the teacher's leadership, can we develop a co-constructive change in classroom learning?

Part of the challenge in developing meta-learning in classrooms is that many of the embedded norms of schooling lead us to approach it in a teacher-centred way: *Let's teach them more about their learning*, or *Let's tell them how to be better learners*. The contradictions inside these statements can take a while to spot. But researchers had identified this thirty years ago: '[m]ost programs do not train students to take responsibility for and control over their own learning … consequently, generalization and transfer effects are limited. … When strategies are taught and used mechanically, the label Metacognition is inappropriate' (Baird and White, 1984: 8).

What about classroom conceptions of meta-learning? If a focus on learning in classrooms is rare, then a focus on meta-learning may be more so. At the time of writing, searching the internet for the phrase (i.e. including the inverted commas): 'meta-learning in classrooms' gave zero results. This review of conceptions raises two key questions for meta-learning to be successful in classrooms: *How do we come to know ourselves as learners?* and *How do we un-hide (i.e. dis-cover) the lives of learners in classrooms?*

CLASSROOM PRACTICES: TOWARDS A NARRATIVE APPROACH

In an earlier review (Watkins, 2001) it was suggested that teachers can promote learning about learning by using classroom activities which: make learning an object of attention;

make learning an object of conversation; make learning an object of reflection; and make learning an object of learning. Developing that suggestion in light of the last thirty years' research, I now propose that if meta-learning is to develop in classrooms, then two principles must apply. The first is that meta-learning will only help learners make the connection between monitoring and controlling their learning if the monitoring engages the agency of the learner. And the second is that meta-learning will only help people 'know themselves as learners' if the language used is owned by the learners themselves. These principles can be advanced through classroom practices of the following sorts: noticing, narrating and navigating.

Noticing

This is the first step: to stimulate and credit learners with the fact that they direct their attention and that this is a key building block. It can develop further into a focus on one's own activity: that key element of noticing what you are doing while you are doing it. We might underestimate young people's noticing: a teacher in a West London school put a sign up at the front of her classroom for 5/6-year-olds, saying, 'What have you noticed today?'. She reported back to the project group: 'I soon took that down!'; 'Why?'; 'Because they noticed so much and it took ages for them to tell me it all'. She then changed to having the pupils tell interested others in the class, and in so doing the practice contributed to a more shared classroom culture of noticing.

When the focus of the noticing is some aspect of our own functioning, we are 'going meta', 'What did you notice about your reading?' 'What did you notice about your conversation?' and so on. Here again the style of language may again be highlighted: at worst, responses like 'My reading was good' will show a surface (performance judgement) conception and little opening for development. The style of language used needs to promote learner agency and ownership if this is to be avoided.

Narrating

Bruner (1985) made an important distinction between two modes of thought: narrative and paradigmatic. A paradigmatic way of understanding involves the use of general theories, and formal systems based on categorisation. It shows in approaches such as 'learning styles'. The language of 'learning styles', despite its weak theoretical foundations, dubious measurement protocols and overblown claims (Coffield et al., 2004) can turn into a language of learn-er styles, which then repeats the school tendency of categorising learners, and no improvement in pedagogy occurs. Some practitioners have reported that starting their development using learning preferences did not generate the dialogue about learning that they were seeking (Martin and Roberts, 2007). The contrast is a narrative way of understanding, which is more particular, time-sensitive, and involves human action and intent. Bruner believed that the two are irreducible to each another.

Knowing yourself as a learner is not achieved by categorising yourself according to someone else's paradigm. It is achieved by remembering, telling and discussing stories of yourself as a learner. And it is crucial to note that the only form of language humans have for relating experience is narrative (Ricouer, 1984). Open-ended invitations of the form: 'Tell me about some learning you've enjoyed' will elicit a storied response with key players, actions and so on.

Another important aspect of a narrative approach is shown when numbers of people tell their stories: the conversation develops richly. This is partly because 'one story leads to another', and when the stories are the narrator's learning experiences, conflictual discussion is rare; respect for the authentic voice of the learner is common. It is also common that the conversation rises above the particular examples. As narrative therapists in other contexts have put it: 'sharing is caring but meta is better' (Christofas et al., 1985). And this process builds a shared culture; as Pramling Samuelsson (2004: 32) put it: '[l]anguage

and narratives are constructions in groups that make individual memories into shared conceptual systems'.

Building a narrative with focus can be helped in a range of ways which promote extra perspective on one's learning experiences. Photographs of learning situations, children's own drawings of occasions they remember, and even video-recordings can be helpful in creating both focus and perspective. Researchers with children finding difficulty in reading video-taped the extra help sessions they received and then played them back to the children, finding '[w]hen given an opportunity to view and talk about what they had done in intervention sessions, children in the current study were able to demonstrate greater metacognitive awareness than they had during the lessons' (Juliebo et al., 1998: 31).

Appreciative Inquiry is an approach to change which is especially useful in developing against the grain of a dominant culture (Hammond, 2000). It starts with examining participants' best experiences in the area under review, and then goes on to identify how more such experiences could be helped to happen. Using such an approach for a small number of after-school sessions, Davies (2013: ii) found that 'the children experienced significant shifts in their understanding of learning and their perceptions of themselves as learners', even those who had been convinced by school and low grades that they were 'no good' at learning.

With a wider sample Carnell (2005) found that talking with young people about learning reveals the dominant discourses, but talking with them about their best experiences reveals richer conceptions. Such talk needs to be practiced and developed as a key part of changing the culture. A framework that can help with appreciative narratives of learning is the storyboard. This is a single sheet of paper with a simple set of frames for the beginning, middle and end of the story, with space for drawing and writing. They can be focused on specific areas such as 'a time when I learned really well with others', phrased in a positive way, and when the young person has illustrated the story, a prompt asks them to identify their contribution to the story going so well, for example, 'I can help myself learn well with others by ……..'. An early example for me was a class teacher using a very open-ended title: 'My most impressive learning'. The range and depth of stories told, both in and out of school, was a very rich surprise to the teacher.

On another occasion I was asked to meet a class whose teacher described them as 'not taking responsibility'. I imagined that was a statement about the culture, so asked the pupils to complete a storyboard on 'a time when I took charge of my learning'. They extracted:

Things I do that help me to take charge of my learning

I gave myself time to stop and think

I experimented and checked my results

I got stuck, then I thought for a second, then I found an answer

I got stuck, then I used my imagination to take charge

I kept thinking 'I have to do it'

I told myself that I had to do it, so I did!!

I concentrated and believed in myself

I pulled myself together

I said to myself 'I can do it'

I said to myself 'I believe in myself'

I said to myself 'I believe I can do it' I gave myself hope

I believed in myself and doing what I want to do, not what I have to do

I watched others and kept on practising

I saw my friends and said 'they're human as well: if they can do it then I can do it'

I kept on trying until I got the hang of it

I didn't give up

I pushed myself and read it over and over and over again

I push and push and push myself to write

I used the two 'p' words – patience and perseverance

The teachers were surprised and impressed with the effective skills and self-talk which the pupils used, and which had previously

been unknown to them. For the rest of that school year they built on learner responsibility, and the results improved.

Appreciative storyboards are a good start to the exchange of stories, and they also generate interested dialogue between participants. As such they are a good contribution to developing the culture, a concept which sometimes is talked about in disempowering ways, but those who have studied it define it in a grounded way 'the ensemble of stories we tell ourselves about ourselves' (Geertz, 1973: 448).

Navigating

One of the richest metaphors for talking about learning is that of journey. Of course 'learning journey' can be reduced to non-learning talk (such as the tests and targets in the government publication under that title (DfEE, 2000), which in 128 pages only uses the word *learn* twice, and these were both references to something that parents could do). More common usage of *journey* brings in plenty of other useful parallels for learning: destination, map, choice of route, navigating. Imagine a whole classroom wall with the class account of their developing journey. I have even seen children appropriate road signs and adapt them to create messages for learning.

Navigating a journey puts someone into a meta position, but it also puts them in the driving seat, another important metaphor for highlighting learner agency and the self-directed learner. The three phases of planning, monitoring and reviewing can be put in everyday accessible terms:

Before starting

Where do we want to get to?

Which way should we go?

Has someone got a map? Or shall we make up our own route?

Is there anything to remember from previous journeys?

Do we need to take any equipment?

On the road

How's it going?

Are we on track?

Do we need to change direction?

Shall we check back on the map?

Has anyone gone another way?

Cor look!

Journey's end:

Where did we get to?

Is this the place we planned? Maybe it's better!

Shall we take a photo/send a postcard?

Did anyone get here by another route?

How would we do it another time?

Where next?

The final stage of reviewing can sometimes be promoted by learning logs, a means of recording reflections over time. Here again, the format of a learning log can be too much teacher-defined, even using a tick-box format. This turns out to be less effective than a dialogic approach: 'The learning log did stimulate student reflection, but did not prompt the level of learning strategy awareness that emerged in the semi-structured interviews' (Stephens and Winterbottom, 2010: 72).

Rather than logs, we may have learning journals. After all, some teachers reminded me, when you're on a journey you take a journal. This stance on a reflective record helps us use more student-centred prompts, in the style of 'What would you like to remember about today's journey?' In a project with high school students, developing their explicit knowledge of learning included open-ended prompts for reflection in learning journals, and led to a better end-point: 'Those students who planned and monitored their work produced essays of higher quality' (Conner and Gunstone, 2004: 142).

As well as individual learning journals, a whole class may review the journey they have been making together. During one such review with a class of 8-year-olds the teacher

was interested in the current state of the earlier distortions of learning, so she asked: 'What's the difference between learning and work, or is there none?'. One student replied: 'When you work, you work for someone else, and when you learn you learn for yourself and do different things'. Another continued 'I don't think there is a difference, because like when you're working as a teacher you can learn from your students'. The latter comment seemed a good indicator of a learning-centred classroom, when students know that their teachers are learning from them.

TEACHERS AS LEARNERS

There are many pressures on teachers to focus on teaching rather than learning, and these maintain the long-standing stereotype of teaching. But all teachers have experienced times when learning was really good in a classroom, and their analysis of their experiences fits with decades of research. So appreciative inquiry will be appropriate here to develop from their best experiences of active, collaborative, learner-driven classrooms (Watkins et al., 2007). This accords with research on the 'Learning How to Learn' project in the United Kingdom, which found that in the cases where classrooms became more learning-centred there was only one process which explained the development: enquiry by teachers (Pedder, 2006).

Professional development of teachers along these lines has been shown to be effective: 'involvement in a systematic exploration of the learning process, with teachers explicating their knowledge of learning, has a direct impact on the display of effective teaching behaviours and on teachers' personal explicit theory of learning' (Munro 1999: 151). And this capacity of teachers is deemed more important if we accept the idea of a fast-changing world, acknowledging '[t]he significance of meta-learning ability, which is found to be an essential component for the professional development of teachers in a changing context' (Pui-wah, 2008: 85).

In the early stages of development teachers too will show the dominant conceptions; in one study 'two groups have been distinguished: a group of teachers having a broad vision about learning to learn and a group of teachers with a narrow vision' (Waeytens et al., 2002: 305). But in another parallel with the process for children, Carnell (2001) found that staff involved in action research on their pedagogy overcame their initial hesitations, and their learning was developed through dialogue, which included a focus on their own learning and therefore became meta. She concluded that '[t]hrough meta-learning dialogue generated from action research, teachers create conditions to make their own and young people's learning more effective' (Carnell, 2001: 54).

The processes and outcomes are clear; the restraining forces seem strong (at first), making this area of theory and practice more of a challenge than it rightly should be. But in schools that take the journey to become learning-centred (as sampled briefly in the opening dialogue and see Reed and Lodge (2006)) the effects are inspiring.

NOTE

1 See https://www.youtube.com/watch?v=2rL33mK8ksg

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