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Effective Learning

The purpose of this paper is to lay out key elements of learning, to define effective learning, and to consider how it may be promoted in classrooms.

What is Learning?

There have been many definitions of learning: most leave teacher readers disappointed. The following definition draws out key elements, which have individual and social implications for teachers and schools:

> "Learning … that reflective activity which enables the learner to draw upon previous experience to understand and evaluate the present, so as to shape future action and formulate new knowledge"[1]

Features highlighted by this definition include:

- an active process in which the learner relates new experience to existing meaning, and may accommodate and assimilate new ideas
- past, present and future are connected, although a linear connection is not assumed:
  un-learning and re-learning may be implied
- the process is influenced by the use to which learning is to be put: how the learning informs action in future situations is vital.

The above definition stands in contrast to prevalent views of learning, which imply that it is a passive process of knowledge acquisition, with predictable and measurable outcomes.

Definitions do not cover everything. The above does not specify prior conditions (for example how learners select what to learn, the beliefs which the learner brings) or the context in which learning happens. Indeed, this definition does not refer to other people in the context: teachers, facilitators, peers, etc.

What's involved? - Models of learning

A model draws out key elements and makes a statement of their relation.

Dennison and Kirk[2] describe four elements in a learning process, drawing on the model by Kolb[3].

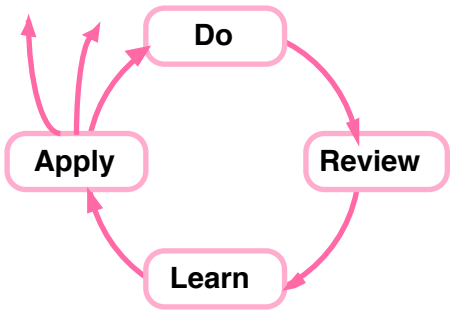


Figure 1: A model of the learning process

This cycle highlights activity in learning (Do), the need for reflection and evaluation (Review), the extraction of meaning from the review (Learn), and the planned use of learning in future action (Apply).

The model may describe the process for a learner on her/his own who is actively making sense of a learning occasion, or for a group of learners involved together. Whatever the overall time scale, time is required for individuals to reflect, make meaning, and move forward.

Other elements, such as the previous experience of the learner, the context of learning, and the effects, are included in the model below.

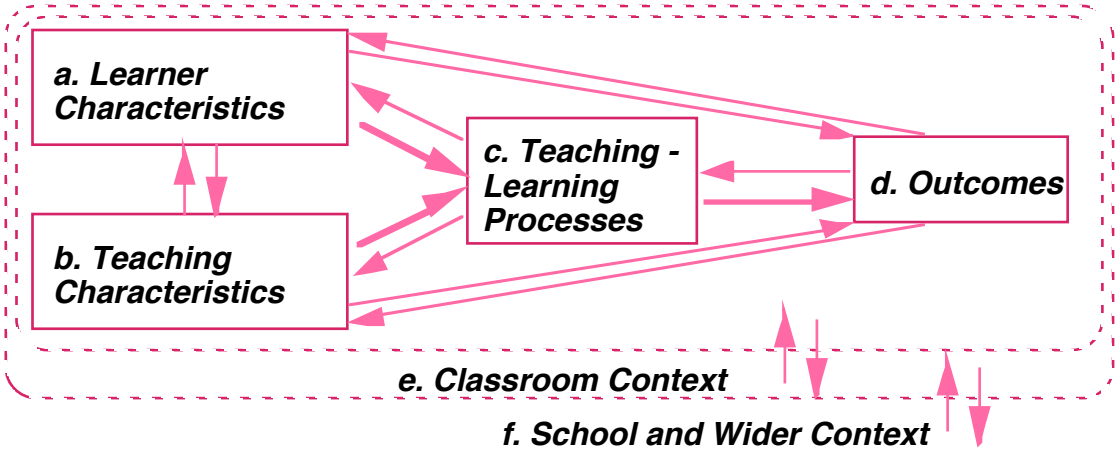


Figure 2: A contextual model for school learning, developed from Biggs and Moore[4]

Figure 2 does not portray a linear mechanical model: the arrows denote influence in both directions, recognising, for example that outcomes affect characteristics of teaching, that particular outcomes for learning will accentuate particular learner characteristics, and that the qualities of classroom and school context affect the process of learning.

We now expand each element of Figure 2, before defining "effective learning".

a. Learner Characteristics

Learner characteristics are not fixed: current state, previous competence, previous experiences and beliefs influence the learning being considered.

What state is the learner in?

When approaching any new knowledge, a learner's state may reflect his/her current sense of competence and view of the need to learn. Dubin[5] suggested four states.

	Unconscious (of a need to learn a specific skill or knowledge)	*Conscious* (of a need to learn a specific skill or knowledge)
Incompetent (relative to a specific skill or knowledge)	Unconsciousincompetence	Consciousincompetence
Competent (relative to a specific skill or knowledge)	Unconscious competence	Consciouscompetence

Figure 3: Four possible states of the learner

The state of "conscious incompetence" may be valuable at the start of a learning experience.

What is the learner's view of learning?

From age 4, children's conceptions of learning develop, from learning to do towards learning to know, and in some cases learning to understand[6].

By age 12 pupils' learning conceptions vary from naïve to functional to developmental[7]. When asked, learners may report different conceptions of learning:

- increasing one's knowledge
- memorizing and reproducing
- applying
- understanding
- seeing something in a different way
- changing as a person

(seeing oneself in a different way)[8]

However, important differences between these may not be so clear to learners as they are to researchers: 14 and 15 year-olds have been said to have no clear understanding of how they learn[9]. A learner's conception of learning affects how s/he goes about learning: those early in the above list are associated with simple approaches rather than focusing on understanding[10].

Learners' conceptions of learning reflect their educational experiences – the style of teaching, the disciplines followed, and the assessment systems in which their learning has occurred.

What is the learner's approach to learning?

Learners vary in their beliefs about success, their goal orientation in learning, and their responses to difficult tasks[11].

A positive pattern: *"learning orientation"*	A negative pattern: *"performance orientation"*
• belief that effort leads to success • belief in one's ability to improve and learn • preference for challenging tasks • personal satisfaction from success at difficult tasks • problem-solving and self-instructions when engaged in task	• belief that ability leads to success • concern to be judged as able, to perform • satisfaction from doing better than others • emphasis on competition public evaluation • helplessness: evaluate self negatively when task is difficult
concern for *improving* one's competence	concern for *proving* one's competence

A focus on performance is associated with negative effects for learners:

- greater helplessness "I'm no good at X" [11]
- reduced help-seeking[12]
- less strategy use, and worse performance[13]
- more maladaptive strategies[14]
- greater focus on grade feedback, and worse performance[15].

Approach to learning is learned, alongside and linked to other aspects: gender, cultural experience, etc.
It is shaped by the prevalent ways of talking about learners and learning in school, family and society.

What about "learning style"?

Some uses of this notion suggest learners have a preference for particular channels of reception (e.g. visual, auditory)[16]. It would seem hazardous to encourage learners into "thin" descriptions of themselves as learners (e.g. "I'm a visual learner").

Other uses focus on stages in a learning cycle[17]:

Activists
- involve themselves in new experiences
- tackle problems by brainstorming

Reflectors
- like to stand back to ponder experiences
- observe from many different perspectives

Theorists
- like to analyse and synthesise
- focus on assumptions, principles, theories, models

Pragmatists
- like to try out ideas to see if they work in practice
- take the first chance to experiment and apply.

Each individual is likely to have a profile containing more than one of these styles. As Figure 1 indicates, all are needed for the full learning process. It is crucial to help every learner extend her/his range. This may be best achieved through promoting richer descriptions of learning, not categories of learner.

b. Teaching Characteristics

Characteristics of assessment and curriculum will create tensions in teaching. These impact on conceptions of teaching, and on the process and outcome of learning.

National systems and dominant models of assessment challenge teaching by encouraging mechanistic and fragmented approaches, which in turn disadvantage groups of students[18]. Classroom practice can still assess in a way that promotes qualities such as collaborative and thoughtful approaches to learning, by staying close to learners' experiences and remaining supportive to learners[19].

National "curricula" framed to assist assessment rather than promote important development, lead schools and teachers to adopt strategic responses. Teaching methods focus on "coverage", and the quality of learner experience declines[20].

In this context, teachers are faced with key tensions:

- Issues of responsibility for student performance (is authority vested in external policies or knowledge of student needs, and do teachers have agency in promoting student success?)
- Issues of focusing on learning (is knowledge transmitted or constructed, and is instruction a matter of delivery or of creating an environment for seeking knowledge?)
- Issues of professional culture (is teaching a job or a profession, and is it a solitary or collegial act?).

Teachers' conceptions of teaching vary, with two main orientations - learning facilitation and knowledge transmission[21]. The associated approaches to teaching are in turn linked with qualitatively different approaches to learning: when the approach to teaching is focused on the teacher and knowledge transmission, students are more likely to adopt superficial approaches to learning. Conversely, when the approach to teaching is oriented towards students and to changing their conceptions, learners adopt significantly richer approaches to learning[22].

Teachers' conceptions and approaches influence those of learners. With learning facilitation, students of all approaches focus on their own process. By contrast, in teacher-centred approaches students focus on transmission and reproduction, whatever the approach to learning they bring[23]

c. Teaching - Learning Processes

To arrange activities which promote the process of learning is a complex challenge in any situation, and especially so in a classroom. The deceptively simple hyphen in the phrase "teaching-learning" embodies the core task of the teaching profession.

Bruner[24] helps us see how we are steered in helping children learn by four models of "folk pedagogy":

1. Learning by being shown
2. Learning by being told
3. Learning by constructing meaning
4. Learning by joining a knowledge-generating community

The second is probably the most adhered to line of folk pedagogy in practice today, but as Mark Twain put it "If teaching was as simple as telling, we'd all be a lot smarter than we are".

The ways in which we talk about teaching-learning processes may reflect different conceptions or discourses of learning:

1. S/he taught me … [Instruction]
2. I made sense of … [Construction]
3. We worked out that … [Co-construction]

The first has been most dominant in the 20th century, to the point that when asked about learning many people talk about teaching.

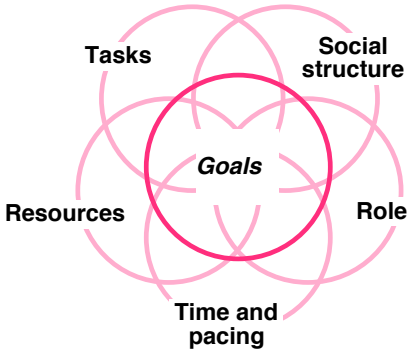
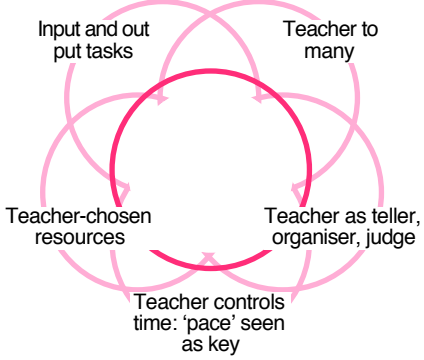


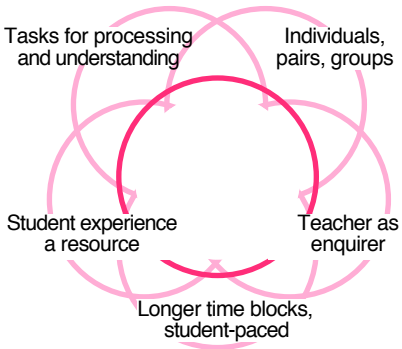
Figure 4: Elements in teaching activities

Teaching activities are composed of elements shown in Fig. 4. Different patterns of teaching activities display different conceptions of learning (Fig 5). Similarly, practices such as "feedback" may be handled differently depending on the conception of learning invoked[25].

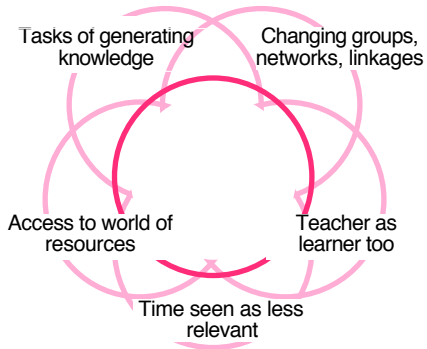
Figure 5: Patterns in teaching activities display different underlying views of learning:



1. Instruction



2. Construction



3. Co-construction

d. Outcomes

Many important outcomes of learning are not simply or quickly measurable. Learning has impact in the long term. Outcomes include many of the following:

- knowledge - of things, people, action
- skills - with things, ideas, people
- action
- feelings and emotions: success, satisfaction
- ideas and strategies about learning
- affiliation to learning
- a sense of oneself, including self as a learner
- a sense of others and interacting with them
- a sense of membership of a community.

e. Classroom Context

The classroom is a unique and complex context. It is crowded, busy, public and sometimes unpredictable. "Teaching in such settings requires a highly developed ability to manage events" [26]. Learners too need skills to cope with such complexity, and become competent learners in such an environment.

Talk in classrooms is mainly about work, sometimes about performance, and rarely about learning[27]. At best 2% of classroom interactions are about learning and how it may be advanced[28].

Some classrooms have strong learning orientation, with beliefs that interest and effort cause success. Work avoidance and alienation from school are low. Those with strong performance orientation involve beliefs that competitiveness causes success[29].

f. School and Wider Context

Learning in school will be influenced by the organisational culture:

- the style of management (does it focus on performance or on learning)
- how learning is talked about
- the extent to which collaboration and dialogue are encouraged.

As the key site of institutional learning, school attracts conflicting views of its goals and of what learning shall be taken to mean.

Learning in school may differ from learning outside school: characteristics of difference may include[30]:

Learning in School	*Learning out of School*
decontextualised	has 'real' context
second-hand	is first-hand
needs motivating	comes easily
tends to be individualistic	is co-operative/ shared
assessed by others	self-assessed
formal structure	few structures

Exceptions to these characterisations provide rich sources of learning for schools: at the same time they may provide tensions with the messages about learning which are dominant in society.

We now move to define *effective* learning and consider its various elements.

What is Effective Learning?

Although the term "effective" has been widely used, it only makes sense when context and goals are specified. Effective for when? Effective for what? The contemporary context has these important features:

- the knowledge base in society is increasing rapidly, and now doubles every 373 days. Teaching knowledge is an anachronism.
- a wider range of the population process and generate knowledge. Information is not the possession of a few "experts".
- employment prospects relate more to the ability to enhance and transfer learning. The accumulation of qualifications is not enough.
- the landscape of learning is much wider and richer, involving multiple contexts, modes and sources. Learning is no longer the province of special institutions: it is a way of being.

In such a context the goals of learning need to focus less on knowledge acquisition by individuals, and more on knowledge-generation with others.

Effective learners have gained understanding of the individual and social processes necessary to become effective learners. This is not just acquisition of particular strategies, but the monitoring and reviewing of learning to see whether strategies are effective. This has been described as "learning how to learn" [31] and "meta-learning" [32]. Effective learning includes this extra crucial ingredient "which actively involves the student in meta-cognitive processes of planning, monitoring and reflecting"[4].

Learning is:
- an activity of construction,
- handled with (or in the context of) others,
- driven by learner's agency.

Effective learning is all of these at their best,
PLUS the monitoring and review of whether approaches and strategies are proving effective for the particular goals and context.

An effective learner is versatile and can actively utilize different strategies and approaches for different contexts and purposes, for example gaining understanding from texts while alone, creating knowledge with others through a project, actively listening to an exposition, building dialogue with people of different stances, extending social roles with the family, and so on.

Effective learning can be seen as a virtuous cycle: effective learning advances effective learning processes: distinctions between process and outcome decrease. In the model (figure 2) there is greater connectedness between the elements: the arrows of influence become more obviously two-way.

Effective Learning in Schools

How can schools, teachers and learners promote effective learning in their schools and classrooms?

We will examine this question for the main elements of the model in figure 2, in a broadly reverse order to that used in the first part of this paper.

Outcomes of effective learning

Effective learning involves outcomes such as:

- more connected knowledge
- wider range of strategies
- greater complexity of understanding
- enhanced action appropriate to goals and context
- increased engagement and self-direction
- more reflective approach
- more positive emotions and affiliation to learning
- more developed vision of future self as a learner
- greater facility in learning with others
- more sense of participation in a knowledge community

We now consider what teaching-learning processes promote learning of this sort.

Teaching-learning processes for effective learning

From the definition above effective learning is promoted by:

- activity, with reflection and sense-making
- collaboration for learning
- learner responsibility for learning
- learning about learning.

Learning cycles for each of these four elements are illustrated in Figure 6 below.

Promoting Active Learning

Active engagement with materials, persons and ideas is needed, with active reflection, enquiry and sense-making. It is not sufficient to be engaged in activity: without reflection the learning potential is lost. Pupils welcome this: they rate activities such as research, group work, practical work and class discussions as twice as effective at promoting their learning as copying, answering questions from a book, and dictation[33].

Promoting Collaborative Learning

When learners together create a joint product and understanding, they develop higher order skills. As Annie (Year 7) put it: "You learn more because if you explain to people what to do you say things that you wouldn't say to yourself, really. So you learn things that you wouldn't know if you were just doing it by yourself". Processes of joint problem-solving, explaining and reciprocal teaching promote this[34] .

Moreover, co-operative cultures and group investigation methods give better academic results[35]. Learners develop interpersonal and management skills[36], improved communication skills and positive multiethnic relations, and the teacher's role becomes more concerned with 'high-level' enquiries and freed from mundane tasks[37].

Promoting Responsibility in Learning

Learners who see themselves as key players in their learning are not only more self-directed, they are also more collaborative: when this is not so, dependent or cynical roles emerge, and engagement reduces.

When learners plan how to proceed, they gain over high quality teacher-planned occasions in terms of GCSE scores, retention of knowledge, and reports of enjoyment, motivation and effort[38]. Teaching self-regulation strategies to developing and struggling writers improves writing performance[39].

Promoting Learning about Learning

Learners who build up the language and piece together knowledge about their learning experiences become more reflective, strategic and versatile, and show improvements in academic performance [40]. This is not simply taught: classroom practices which promote learning about learning include:

- making learning an object of attention
- making learning an object of conversation
- making learning an object of reflection
- making learning an object of learning.

The model overleaf depicts this as an additional cycle

Figure 6. A framework for planning and reviewing the teaching-learning cycle for effective learning.

	Active learning	*Collaborative Learning*	*Learner responsibility*	*Learning about learning*
Do ⇩	Tasks are designed for learner activity, not teacher activity	Tasks in small groups connect to create a larger whole (by roles or by parts)	Learners exercise choice and plan their approach	Learners are encouraged to notice aspects of their learning as they engage in tasks
Review ⇩	Learners stop to notice what happened, what was important, how it felt, etc.	Learners bring ideas together and review how the group has operated	Learners monitor their progress and review their plan	Learners describe what they notice and review their learning (goals, strategies, feelings, outcomes, context)
Learn ⇩	New insights and understandings are made explicit	Explanations of topic and of how the group functioned are voiced across the group	Factors influencing progress are identified and new strategies devised	Richer conceptions of learning are voiced and further reflective inquiry is encouraged
Apply	Future action is planned in light of new under-standing. Transfer to other situations is examined	Future possibilities for group and community learning are considered	Plans are revised to accommodate recent learning	Learners plan to notice more and to experiment with their approach to learning

In the optimum case all elements are present.

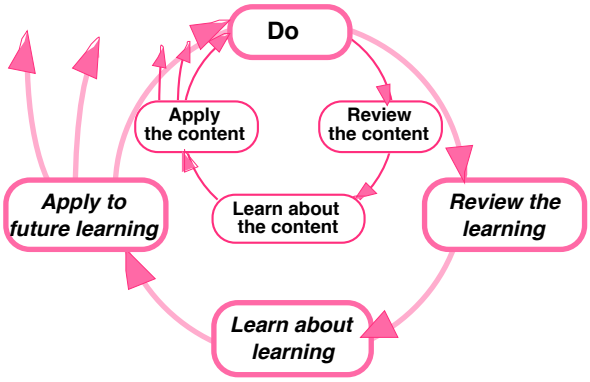


Figure 7: An extra cycle in learning about learning

Aspects of learning about learning include[41]:

- reviewing how we learn most effectively
- exploring our thinking and problem-solving
- reviewing beliefs about successes
- exploring approaches to anxiety-provoking tasks
- managing feelings that impede learning
- practising our approach to difficult tasks, talking ourselves through them
- examining responses to experiences of failure
- analysing contributions to group tasks.

Learner characteristics for effective learning

The definition of effective learning suggests that the effective learner:

- is active and strategic
- is skilled in cooperation, dialogue and creating knowledge with others
- is able to develop goals and plans
- monitors her/his own learning and is versatile across contexts.

What of this is noticeable to others? Think of learners you know, and choose one who, for whatever reason, you have come to see as effective. What does that person do? What can you see about their approach? What can this example help you notice about other learners?

It is not easy for teachers to observe pupils reflecting. "Reflection on the process of learning is believed to be an essential ingredient in the development of expert learners. By employing reflective thinking skills to evaluate the results of one's own learning efforts, awareness of effective learning strategies can be increased and ways to use these strategies in other learning situations can be understood"[42]. When teachers promote reflective discussions among pupils, this promotes pupils' noticing, as well as allowing teacher to notice more. Such practice accepts that "The student knows more than the teacher about what he has learned – even if he knows less about what was taught"[43] .

When learners' knowledge of their own learning experiences is enriched and enhanced through well-supported dialogue, the private aspects of learning experiences and the shared language for talking about learning are built together. Through this process learners' characteristics for effective learning can be developed.

Teaching characteristics for effective learning

'Teaching characteristics' here means features of curriculum, assessment, and conceptions of teaching. Even when external aspects of these are poorly designed, classrooms and schools can employ effective learning to address them.

Curriculum which addresses big ideas and which gives learners the big picture is most engaging. Coherence for the learner and the ability to make connections in different contexts[44] is also supported.

In assessment, self-assessment supersedes social comparisons, and enhances learner responsibility.

Conceptions of teaching focus on the learner:

When teachers:	Instruct	Guide	Facilitate	Consult
Learners become:	Dependent	Interested	Involved	Self-Directed

Classrooms as a context for effective learning

When classrooms operate with active learning[45], collaboration[46], learner responsibility[47] and shared inquiry, they begin to operate as a community of learners[48]. In such a context learners develop pro-social skills of dialogue and helping[36], together with positive coping strategies and positive feeling[49].

Such a community cannot be engineered into existence in a classroom, but an engineering approach to schooling can crowd it out.

Schools and the wider context for effective learning

Schools that promote effective learning emphasise intrinsic motivation, social relationships for learning, and an overall learning culture. They are learning organisations[50], making many connections within and beyond their boundaries. They anticipate future problems and seek continuous review.

"Learning-enriched" schools display more sense of purpose (i.e. learning), and are less routinised than the learning-impoverished school. Teachers see peers as a resource, and continue to learn: new teaching ideas come from colleagues and their own creative solutions. The greater teachers' opportunities for learning, the more their students tend to learn: pupils achieve better in learning-enriched schools[51].

In such a setting, leaders of learning are likely to:

- make learning a visible, central element
- talk publicly about learning
- promote inquiry into learning
- support learning exchanges and forums
- ensure fluid organisation
- reward and support staff learning
- ask of every action and every policy "What do we learn from this?"
- encourage others to do the above.

Towards More Effective Learning in our Classrooms and Schools

The analysis of effective learning does not provide a simple prescription nor a recipe for easy change. As the traditional site of compulsory learning, schools may have initial difficulties in promoting more effective learning. School learning is on the public agenda of many stake-holders, and schools are sites for public contestations of society's difficulties.

Making a change

When teachers (i) believe that change is needed, and (ii) start with the aspects nearest to them, they can make a significant difference to the quality of learning. For example, try banning the word "work" from your classroom and see what happens when you substitute the word "learning" – effects can be electric!

Because the pressures to focus on performance are very strong, as further experiments and enquiries into learning develop, it is necessary to keep going and remember the evidence that a focus on learning enhances performance.

Working against the grain

Teachers who are subject to performance pressures may either a) cave in, b) pass it on, or c) wise up. The last of these responses involves teachers developing their professional voice on learning, and distinguishing it from the official voice (which rarely mentions learning). A focus on learning will often seem "against the grain".

"A public discourse has been established which accounts for successful teaching in mechanistic and superficial terms as a set of external behaviours which are not linked to an understanding of learning. It is based on teacher performance, not interaction between teachers and learners"[52]. In this context initiating and maintaining successful practices which promote learning may be inspiring yet at times feel like a struggle.

Resolving the tensions

When teachers depart from the traditional assumptions and views of learning which influence their role, they may experience some of the tensions of teaching (page 3) more sharply than before.

Effective learning suggests resolving the tensions as:

- Responsibility for student performance:
  teacher authority and teaching decisions are best based on their knowledge of students as learners, and teachers do have agency.
- Focusing on learning:
  knowledge is constructed, and teaching is a matter of creating an environment for this.
- Professional culture:
  teaching has a professional voice, and is a collegial activity.

The implications of this paper, and a new resolution of the tensions which continue to face teachers, is that a new stance on the power relations between teachers and pupils emerges. Without this, classrooms and schools stay fundamentally the same.

Noticing current diversions

In times of pressure to produce quick results, it is understandable that some will seek to "accelerate learning". This stance is more often about teaching than learning. It may not be effective learning.

In times when it appears knowledgeable to categorise, the growth of interest in "learning styles" is understandable. Although sometimes this can valuably extend teaching repertoires it may not extend the learner's range or voice on the learning process.

Many enthusiastic conversations, apparently about learning, pay little attention to context, especially the complexity of the classroom context. The implications of context-free knowledge (e.g. brain research) for learning in the classroom are far from clear.

Above all, it is necessary to know that quick-fix instrumental strategies may be "more of the same" and not contribute to any transformation. We need to move from the mechanical and backward-looking "what works?" to the more human and future-oriented "what's worth working on?".

Closing Reflections

Review	What reflections about your own learning and teaching did your reading of this paper stimulate?
	How do your school practices and policies focus on learning and support effective learning?
Learn	In what way have you enriched your view of *effective* learning as a result of your reading?
	What new visions for classrooms and schools have these ideas stimulated?
Apply	How would you tell a story of these ideas with some of your colleagues?
	In what ways can you review with your pupils their views about their learning?
	What experiments can you plan to undertake in classroom activities for effective learning?

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