This section explains how building learning power (BLP) differs from, and goes beyond, other ‘learning to learn’ approaches. It gives a systematic introduction to the mind of the effective learner, in terms of the four Rs of resilience, resourcefulness, reflectiveness and reciprocity. By the end of the section, you will have a clear all-round picture of the habits of mind that BLP aims to cultivate.
High achievers are not necessarily good real-life learners

Resilience in the face of difficulty is one of the most basic ingredients of learning power. Yet apparently you can be successful in school without it. Carol Dweck of Columbia University gave a maths test to a mixed-ability group of 14-year-old girls. In the middle of the test booklet, for some of the girls, had been stapled, as if by accident, a page of problems that none of them knew how to do. On the (perfectly do-able) problems after the impossible ones, many of the high-achieving girls did very poorly. As a result of being temporarily flummoxed, they had gone to pieces. These successful students were woefully lacking in resilience, and so could not really be classed as good overall learners.
Developing the mind to learn

Darren and Katie are, of course, fictitious, and Darren in particular is something of an ideal. Nobody can be an exemplary learner all of the time. But everyone can learn to be a better learner, more of the time—not just in school but in the whole of life. Darren has learned to become a stronger, more confident and more competent learner, and Katie is on the way. We now know that ‘learning to learn’ is a real possibility. How well you learn is not a matter of how bright you are. It is a matter of experience, and good coaching. There is a lot of talk about learning at the moment, and the goal of enhancing students’ learning is widely espoused. In practice, though, this can mean one of three rather different things. First, it can mean helping students to learn more, and thus raise their achievement. To do this, you might offer incentives, or cut the syllabus into small, bite-sized pieces that make it easier to ingest. Secondly, you can help students to learn better. That might mean helping them find out what is their preferred learning style, and taking that into account as you teach; or making sure that students are well fed and watered before lessons. Thirdly, you can try to help students to become better learners—not just in school but in real life as well. That might mean trying to help them develop the skills and attitudes to learn well whatever the conditions.

These three goals are not the same, and methods that work for one don’t always suit the others. Spoon-feeding may improve results, but it doesn’t develop chewing muscles. It is quite possible to help students learn more without helping them become better at learning. Indeed, some ways of raising achievement actually damage or undermine students’ learning ability. And helping people learn better is also not the same thing as helping them become better learners.

You can help them learn better by providing lots of support and guidance—but when you take that guidance and support away, have they become more independent, or less?

There is a great deal of information and advice around about how to help students learn more or learn better. This book is different. It is about how to develop students as learners—how to increase their portable learning power—and to raise standards by doing so. We call this building learning power, BLP. The evidence is: helping students learn more or better does not necessarily help them become better learners. But if you help students become better learners their achievement rises. And they will take away from school not just a few certificates, but greater confidence, competence and curiosity to face the uncertainties that life will surely throw at them. Give your car a good service and it will naturally go further and faster. Aim at levering up standards, and you may get better results, but at the cost of turning out young people who do not know how to think for themselves.

It is obvious from the vignettes that being a good learner is not just a matter of learning a few techniques like mind mapping or brain gym. It is about the whole person: their attitudes, values, self-image and relationships, as well as their skills and strategies. Being a good real-life learner means knowing what is worth learning; what you are good (and not so good) at learning; who can help; how to face confusion without getting upset; and what the best learning tool is for the job at hand. Just as being a reader involves much more than simply being able to read, so ‘being a learner’ means enjoying learning, and seeing yourself as a learner, seeking out learning as well as knowing how to go about it.
The learning-power mind
Developing the mind to learn . . .

Developing learning power means working on four aspects of students’ learning. The first task is to help them become more resilient: able to lock on to learning and to resist distractions either from outside or within. The second is helping them become more resourceful: able to draw on a wide range of learning methods and strategies as appropriate. The third is building the ability to be reflective: to think profitably about learning and themselves as learners. And the fourth task is to make them capable of being reciprocal: making use of relationships in the most productive, enjoyable and responsible way.

THE FOUR Rs of LEARNING POWER

Resilience – being ready, willing and able to lock on to learning
   Absorption – flow; the pleasure of being rapt in learning
   Managing distractions – recognising and reducing interruptions
   Noticing – really sensing what’s out there
   Perseverance – stickability; tolerating the feelings of learning

Resourcefulness – being ready, willing and able to learn in different ways
   Questioning – getting below the surface; playing with situations
   Making links – seeking coherence, relevance and meaning
   Imagining – using the mind’s eye as a learning theatre
   Reasoning – thinking rigorously and methodically
   Capitalising – making good use of resources

Reflectiveness – being ready, willing and able to become more strategic about learning
   Planning – working learning out in advance
   Revising – monitoring and adapting along the way
   Distilling – drawing out the lessons from experience
   Meta-learning – understanding learning, and yourself as a learner

Reciprocity – being ready, willing and able to learn alone and with others
   Interdependence – balancing self-reliance and sociability
   Collaboration – the skills of learning with others
   Empathy and listening – getting inside others’ minds
   Imitation – picking up others’ habits and values
The learning-power mind

Key points

Good learners –

- like a challenge
- know that learning is sometimes hard
- are not frightened of finding things difficult or making mistakes
- like the feel of learning

Resilience

absorption

flow, the pleasure of being rapt in learning

managing distractions

recognising and reducing interruptions

noticing

really sensing what’s out there

perseverance

stickability, tolerating the feelings of learning
Resilient: ready, willing and able to lock onto learning

The first aspect of a supple learning-powered mind is the most basic. Resilience is about locking on to learning: being able to get absorbed, and to stay engaged despite external distractions (unless they are genuinely important, of course!); and despite the ebb and flow of the different feelings of learning, such as excitement, frustration or confusion. If good learners do get upset and break off, they are quicker to come back and try again. They are drawn to learning and they like a challenge. They are more likely to ‘give it a go’ even though the method and the outcome may be uncertain. They know that learning is sometimes hard—for everyone, no matter how ‘bright’—and are not generally frightened of finding things difficult or making mistakes. They like the feel of learning, as well as the satisfaction of mastering a skill or solving a problem.

There are four aspects to resilience: absorption—being rapt in the flow of learning; managing distractions—recognising and reducing interruptions; noticing—seeing and sensing what’s out there; perseverance—stickability, tolerating the feelings of learning.

Absorption

For learning to occur, the learner has first to be engaged with the object of learning. They have to be paying attention. But we can pay attention in different ways. Sometimes attention is very focused, deliberate and conscious. Sometimes it is more a kind of background awareness that may not be very conscious at all. This latter kind of attention is not to be underestimated. A lot of learning happens incidentally, out of the corner of your eye, as it were, while you are trying to get something else done. So paying attention does not necessarily mean effortful concentration. The best kind of attention depends on what kind of learning you are up to. But without engagement of some kind, no learning can happen.

If we were merely concerned with raising achievement, we would look for ways to induce the kinds of attention we want—by making lessons more entertaining, maybe, or by chiding students who aren’t concentrating. But BLP asks:

How can we systematically help students to develop the habits and dispositions of ‘good attending’ for themselves, so that over time they become second nature?

Developing learning power means strengthening the ability to pay attention to what is going on, and to maintain attention despite a variety of competing attractions. There are three important things to remember about attention. First, you can’t make yourself attend. It’s not a matter of talking to yourself, or fixing your eyes earnestly on the page, or furrowing your brow. We attend to what our brains find novel, interesting, important, enjoyable, perplexing, disturbing
Students’ success in school depends on how rapt they are while they are studying. Jeanne Nakamura gave a group of high school students a small beeper that went off at random times during the day, and when it did, they had to write down what they were doing, and how absorbed or ‘in flow’ they were feeling. When they were studying, high achieving students reported they were in flow 40% of the time, while low achievers only reported flow 16% of the time. More often, the low achievers were bored or anxious. Comments Daniel Goleman: ‘Sadly, the low achievers, by failing to hone the skills that would get them in flow, both forfeit the enjoyment of study, and run the risk of limiting the level of intellectual tasks that will be enjoyable to them in the future.’

Key points
Concentration –
• can’t be forced
• isn’t always useful
• develops with age
• is rewarding

Teaching resilience

‘It doesn’t help a child to tackle a difficult task if they succeed consistently on an easy one. It doesn’t teach them to persist in the face of obstacles if obstacles are always eliminated . . . What children learn best from are slightly difficult tasks which they have to struggle through. Knowing they can cope with difficulties is what makes children seek challenges and overcome further problems.’

Professor Carol Dweck, Columbia University, New York
or threatening. To get someone to lock on to learning, the object or activity has somehow to matter to them.

Secondly, distractibility is useful. Being totally immersed in something, however valuable, may mean that you miss whatever else is going on, whether it be a new opportunity or a looming threat. Our ancestors would have been vulnerable if they had not been continually checking for danger, and so, to some extent, are we. Children who have grown up in insecure or chaotic contexts are evolutionarily quite right to be hyper-alert to what is going on around them (constantly on the look-out for potential sources of reassurance, recognition, or further harm). Some students may be preoccupied with much more urgent calls on their attention than the classroom topic of the day.

Thirdly, the ability to maintain concentration on long-term goals, in the face of more immediate attractions, is not finally developed until adolescence. This kind of commitment to our deeper goals and values depends on the frontal lobes of the brain, and we know that these are the last areas of the brain to come fully on line.

For all these reasons we should have realistic expectations of younger or more anxious children. They can’t be cajoled or bullied into locking on to learning.

However, having said that, the ability to get lost in learning is vital, and one we should cultivate. That state of being absorbed, ‘rapt’, is inherently gratifying and rewarding. Psychologist Mihaly Csikszentmihalyi says we are programmed to be learning animals partly because the feeling of being stretched by the ‘risky edge’ of our experience is so exhilarating. Some people get it from skiing or playing an instrument. Some people only get it from such intensely stimulating situations as clubbing or fighting. Others get it from a good book, a crossword puzzle, making models, or a really fast witty conversation (what the Irish call ‘the craic’). Good learners like that feeling of absorption, when they’re writing an essay just as much as when they’re dancing. Teachers can encourage students to recognise and seek that pleasure in all kinds of learning.

Managing distractions

There are things, as we have said, that threaten to disrupt absorption, both from inside and out. If you are hungry, tired or anxious it is hard to concentrate. And so it is if there is too much going on around you, or if you are uncomfortable.

Good learners are aware of possible sources of distraction, and do what they can to diminish them.

Diminishing distractions is an individual matter: what works for one person may not work for another. Some people like to work with background music or sitting on a chair that is not too soft. Others like to lie in bed in the quiet. Good learners find out what their ideal conditions are. Of course, as we saw earlier, not all distractions can be managed so easily. But some can.
Resilience and relationships

How resilient children become depends a lot on their relationships with parents and teachers. For example, children learn not only what is interesting, but how to be interested, and for how long, from the habits of the adults around them. Persistence rubs off from one generation to the next. And the reverse is also true. Doreen Arcus has found that timid and unadventurous children tend to have parents and teachers who are anxious on their behalf, and rescue them prematurely from difficulty. However she also found that the caretakers of timid children did not set them clear limits, so they were often unsure whether it was safe to be adventurous or not. Being gently overseen by a benign but firm supervisor enables youngsters to be less cautious or fearful on their own account, because they have faith that, within the limits, they will come to no great harm.

Key points

- Learn without thinking
- Contemplate
- Value ‘stilling’
- Stick at learning
- Reject undermining false belief

The making of a poet

‘My mother, the scientist, taught me to see. She taught me attention to the complexities of surface detail and also attention to what lies beneath those surfaces . . . In doing so, she made me a poet. My mother, the researcher . . . sat patiently at the microscope on the kitchen table, observing, noticing, discovering patterns, making sense. In that kitchen, I learned the patience of research. My mother made order of the raggedness of the living world, and I was paying attention. I didn’t know at the time I was . . . Yet . . . on some level, in some hidden and inarticulate way, I must have been attending and recording extremely well . . .

‘When I taught high school English and creative writing, I was always searching for ways to bring students into attention, the sort of deep attention that would elicit the capacity for poetry . . . In a homework assignment, I would ask them to “find a place where there’s nothing going on. Sit there for ten minutes and record everything that happens.”

Anne McCrary Sullivan, American poet

RESEARCH TELLS US . . .

Resilience and relationships

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Noticing
Learning often relies on being able to pay attention to what you are interested in: not necessarily thinking about it, just really noticing how it looks, what it is made of, or how it behaves. Many professionals, from poets to scientists to business managers, rely on this quality of attentive noticing: being able to identify the significant detail, or to let an underlying pattern of connections emerge into their minds. Sometimes you have to be patient before the detail or the pattern will reveal itself to you, like looking for sea creatures in a rock pool. And this is a skill that can be strengthened with practice. We often pick up this skill from people around us. Babies very soon learn to work out what their mother is focusing on, and to ‘share joint attention’ with her. It helps to be around people who are demonstrating this ability to watch carefully and turn their observations into accurate descriptions. Getting a really clear sense of what, before starting to think about how or why, is very useful.

Perseverance
Attention can be broken when learning gets blocked, but good learners have learnt the knack of maintaining or quickly re-establishing their concentration when they get stuck or frustrated. The quality of stickability or perseverance is essential if you are going to get to the bottom of something that doesn’t turn out as quickly or easily as you had thought, or hoped.

If you get upset and start to think there is something wrong with you as soon as you get stuck, you are not going to be able to maintain engagement.

Instead all your energy will go into trying to avoid the uncomfortable feeling, and this may mean drifting off into a daydream, creating a distraction, or blaming somebody else. A great deal of classroom misbehaviour starts this way. If students were better equipped to cope emotionally with the inevitable difficulty of learning, they would mess about less. There is a range of things that teachers can do to strengthen students’ stickability.

Perseverance is often undermined by two common and erroneous beliefs. The first is that learning ought to be easy. If learners think that they will either understand something straight away, or not at all, then there is simply no point in persisting and struggling. The second is that bright people pick things up easily, so if you have to try it means you’re not very bright. Clearly the idea that effort must be symptomatic of a lack of ability makes persevering an unpleasant experience. Good learners develop perseverance when their parents and teachers avoid conveying these messages, even unwittingly.
## The learning-power mind

### Resourcefulness

<table>
<thead>
<tr>
<th>Action</th>
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<tr>
<td>questioning</td>
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<td>capitalising</td>
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### Key points

- Be curious and inquisitive
- Be adventurous within clear boundaries
- Don’t be afraid of ‘don’t know’ state of mind
- Play with materials and ideas

### Diagram

- **Resourcefulness**
  - Planning
  - Meta-learning
  - Distilling

- **Reflectiveness**
  - Revising
  - Inter-dependence

- **Resilience**
  - Empathy and listening
  - Collaboration

- **Reciprocity**
  - Perseverance
  - Managing distractions
  - Absorption

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Section 1b | Developing the mind to learn
The second aspect of a learning-powered mind is resourcefulness. The great Swiss psychologist Jean Piaget once defined intelligence as ‘knowing what to do when you don’t know what to do’. Being resourceful means having a good repertoire of attitudes and strategies for confronting the world when it becomes strange or out of control. Good learning involves engaging with uncertainty in effective ways: ways that are most likely to deliver an expanded sense of mastery and comprehension. If resilience is to do with getting and staying engaged—with attention and emotion—then being resourceful means being skilful at learning, and having the right frame of mind to want to get to the bottom of things.

Some children’s early experience has taught them that the world is not a very comprehensible place, and they may have already developed what psychologists call ‘learned helplessness’. They don’t bother to look for order or meaning because they have learned that order and meaning are not to be found. Conversely, children become bolder and more curious when their world is full of structure and rhythm which they can easily discover. Success at finding or creating order and meaning encourages them to go on and look for more. The old wisdom about ‘freedom within clear boundaries’ really does produce more adventurous spirits.

There are five ingredients of resourcefulness: questioning, making links, imagining, reasoning and capitalising.

**Questioning**

Questioning means both the ability to ask good questions and the disposition to do so (which is sometimes called curiosity). Good learners like questions, and are not afraid of the ‘don’t know’ state of mind out of which questions emerge.

*Good learners like to wonder about things. For them, it often really is a wonder-ful world. The phrases ‘How come?’ and ‘What if?’ are never far from their lips.*

They value getting below the surface of things, and are less likely to accept uncritically what they are told. They like to come to their own conclusions. They are more willing to reveal their questions and uncertainties if they think it will help them learn.

Questioning can be as much non-verbal as it is verbal. Playing around with materials or ideas just to see what happens is a powerful way of asking questions. It is what artists and inventors spend a lot of their time doing. The inclination to ask questions flourishes when you are around people who are also asking questions, and who encourage and appreciate your questions too.
Ellen Langer at Harvard University has shown that the teacher’s choice of language can make a great difference to students’ creativity. She taught two groups the same idea about how cities grow, except for one group she said ‘This is how it happens’, while the other group she told ‘This could be how it happens.’ The groups learnt the information equally fast, but when they were asked to use the information in a new way, the ‘could be’ group easily outperformed the ‘is’ group. Langer explains that ‘could be’ language invites students to think how else things might be. ‘Is’ language simply has to be grasped. If something is the absolute truth, all you can do is try your best to understand and remember it.

RESEARCH TELLS US . . .
The power of mental rehearsal

Shelley Taylor at the University of California has shown that imagining yourself revising actually improves examination performance. Shortly before an exam, she asked one group of students to spend five minutes a day imagining themselves revising in a way that would give them a good mark. A second group imagined themselves having done well. And a control group just revised in the normal way. The second group actually studied less than the controls and did worse in the exam, while the first group studied more and improved their marks by an average of eight percentage points.

RESEARCH TELLS US . . .
‘Could be’ language

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Key points
- Look for patterns and relationships
- Connect new learning with your opinions and beliefs
- Use ‘active’ and ‘receptive’ imagination
- Play with ideas and possibilities

‘Students’ revision becomes more effective, and their exam results improve, if they spend a little time mentally rehearsing the process of revision before they embark upon it.’

Professor Shelley Taylor, University of California

‘He who is afraid of asking is afraid of learning.’

Danish proverb
There are classrooms that have a ‘Wonder Wall’ where both students and teachers store up all their questions. There are classrooms where marks are awarded for good questions as well as good answers.

Making Links
The second aspect of resourcefulness is integrating or making links between different things. Again, it comprises not only the ability to see or make relationships but also the inclination to look for them.

Trying to hook up new experiences with what you already know is what some people call ‘making meaning’.

New ideas become meaningful to the extent that we can incorporate them within our own mental webs of associations and significances. When the patterns of relationship to be discovered are rather complex or subtle, business guru Peter Senge calls it ‘systems thinking’. Good learners get pleasure from seeing how things fit together. They are interested in the big picture, and how new learning expands it.

Good learners can make all kinds of different links. They can link together this lesson’s physics topic with what they were doing in maths last week. They can look for links to their own goals and interests, to discover the relevance of the new learning to their own lives. They find links to their own real-life experience—using new ideas or theories to make sense of past impressions. They weave new events into their developing autobiographical story relating them to their sense of self. They can connect new learning with their own opinions and beliefs, so that they come out not just knowing something new, but looking at the world in a different way. And—very importantly for creativity—they may look for analogies in their own memory that give them a handle on a complicated new domain. ‘What’s it like?’ they ask themselves.

Imagining
That brings us on to the third ingredient of resourcefulness: imagining. Imagination is not just a cute faculty that children use to weave fantasies: it is one of the most effective tools in the learner’s toolbox. Scientists, designers and executives need a powerful imagination just as much as painters and novelists, and it can either be developed, through appropriate experience and encouragement, or left to shrivel up. Good learners are ready and able to look at things in different ways. They like playing with ideas and possibilities, and adopting different perspectives (even though they may not have a clear idea of where their imagination is leading them). They use pictures and diagrams to help them think and learn.

There are two kinds of imagination: active and receptive. In active imagination, you deliberately create a scenario to run in your mind’s eye (just as Darren did when he was trying to anticipate what his first day at his new school would be like). Sports people use this kind of mental rehearsal, and experiments have shown it to be very effective at improving their level of skill.
More than hard thinking

Learning is not the same thing as thinking. Being a good learner involves more than being a logical, systematic thinker. Most kinds of educational exams test mainly the ability to think explicitly and systematically, though it is only recently that schools have started to try to teach students how to do it well directly. But remembering, explaining and deducing are only three learning skills out of a great many. There is plenty of evidence that good explainers are not necessarily good discoverers, and vice versa. Being able to move flexibly between different modes of thinking: that is what BLP aims to develop.

‘Teaching thinking . . . is not an alternative to the standards agenda but a way of taking it forward.’

Professor Michael Barber

Key points

- Slip problems to the back of your mind
- Use analytical, disciplined thinking
- Use thinking tools for real-life concerns
- Draw on materials to help learning

Research tells us . . .

Education doesn’t help you think

It is an uncomfortable fact that much of what is learned in school doesn’t transfer to real-life situations. David Perkins of Harvard asked several thousand people to make notes for a discussion on general topics such as the impact of TV violence, and then scored the notes in terms of the number and quality of the arguments considered. High-school drop outs performed as well as high-school graduates; first-year undergraduates performed as well as fourth-year; and beginning graduate students were no different from those completing their PhDs. Perkins concludes: ‘Broadly speaking, most educational practice does little to prepare students for reasoning about open-ended issues.’
The second kind of imagination is more receptive, like daydreaming: letting a problem slip to the back of your mind, and then just sliding into a kind of semi-awake reverie, where the mind plays with ideas and images without much control on your part. Successful learners and inventors know how to make good use of this kind of creative intuition. They are interested in inklings and ideas that just bubble up into their minds.

**Reasoning**

The next element of resourcefulness is reasoning—the kind of logical, analytical, explicit disciplined thinking that schools often focus on (sometimes to the exclusion of some of the other elements). There is a lot of interest at the moment in ways of teaching thinking, and there are many materials for teaching thinking on the market. In BLP, such 'Show your working' kinds of thinking are a very important part of the good learner's toolkit, but they are not the be-all and end-all of learning. In fact, research suggests that secondary schools have not been very successful at developing students' ability to think logically in real life.

It turns out to be quite difficult to free any kind of thinking or learning skill from its ties to the particular setting and subject matter in which it was originally practised.

Nevertheless, being able to construct logical arguments or make practical use of Venn diagrams, for example, is very useful, and good learners need practice at using such tools in the context of their real-life concerns.

**Capitalising**

The final aspect of resourcefulness is a little different. It is called capitalising, and it means being on the lookout for materials, resources and forms of support in the environment that can help you in your current learning or problem-solving. Traditional schooling assumes that intelligence is all in the head. But recent studies show that it is much fairer and more accurate to see good learners as people who are ready and able to make intelligent use of all kinds of things around them—floor space, filing cabinets, dictionaries, notebooks, personal organisers, telephones, libraries, e-mail; and, of course, other people (who will feature much more in our fourth aspect). Everyone needs to be good at capitalising on the resources available in the world, so it is obviously a good idea to start developing this skill at school.

The forms of assessment we use in schools have a powerful influence on the kinds of learning that students do, and the kinds of teaching their teachers use. If the good learner is essentially the person plus their resources (and their ability to draw on them), our methods of testing should encourage teachers and students to value and practise capitalising. In today's world, it makes as much sense to sit 15-year-olds down at solitary desks and ask them to display their knowledge and skill as it would to take away David Beckham's football and tell him to perform.
The learning-power mind

Reflectiveness

Key points
- Take responsibility for learning
- Plan and organise learning
- Revise along the way
- Monitor and review progress

The learning-power mind
Reflectiveness

planning  | working learning out in advance
revising  | monitoring and adapting along the way
distilling | drawing out the lessons from experience
meta-learning | understanding learning, and yourself as a learner
Reflective: ready, willing and able to become more strategic about learning

The third aspect of a supple learning-powered mind has to do with self-knowledge and self-awareness. Good learners are intuitive, but they also need to be aware of how their learning is going, and make strategic decisions about it. There are several aspects to reflectiveness, which we call planning, revising, distilling and meta-learning.

Planning
The first aspect, planning, is the ability to take a strategic overview of your learning, and make sensible decisions. It means:

- taking stock of the problem and the parameters within which you must work
- assessing the available resources, both inner and outer, and deciding which you think are going to be needed
- making an estimate of the time the learning will take, and the competing priorities that may have to be delayed or sacrificed
- imagining a route-map for the learning
- anticipating hurdles or problems that may arise along the way.

Good learners like taking responsibility for planning and organising their learning. They welcome opportunities to decide for themselves when, where, why and how they are going to learn—and to get better at doing so. Research shows, for example, that people who can make a reasonable estimate of how long a task will take are more likely to finish on time, and to do better work.

Revising
The second aspect of reflectiveness is revising. However well prepared learners are, they have to expect the unexpected. So planning has to be accompanied by the readiness to revise as they go along. Good learners are able to change their plans and think on their feet. They are able to be flexible. It may be a good decision to say 'This is turning out to be far harder than I thought, and I'm getting less help than I imagined, and there are other interesting possibilities opening up, so I think I'll cut my losses and quit.' Note that the decision is based on a realistic cost-benefit analysis of the actual situation, not on frustration, pique or a blow to self-esteem.

To be effective at revising, learners need to monitor how things are going and periodically review where they have got to.

Monitoring is the art of looking over your own shoulder as you're working away at a problem, asking yourself how it's going.
Five-year-olds can reflect on their learning

Given the chance, and the right kind of encouragement, even children as young as five or six can be reflective about their own learning. Sian, a bright five-year-old, is clearly a better reflector than she is a speller. She wrote in her ‘learning log’ that she had ‘bean wating to No how the Best way to laene is, and the eysistist [easiest]. With a little prompting from her teacher, Hilary Dyer, she ventured an answer to her own question. ‘I think the eest and the best way to laene is not to gese [but to] think.’ In her report of this work, Hilary concluded: ‘From an early age children are able to engage meaningfully in dialogue about their own learning, and can use frameworks offered by the teacher to access their own intuitive understanding of themselves as learners. This seems to indicate that teachers could now desist from treating the children as passengers in the voyage of their own learning, and [instead] treat young learners as co-pilots.’

RESEARCH TELLS US . . .

Sometimes it’s better not to know what you’re trying to do

Schools have often been preoccupied with the kind of learning in which you are trying to get to a clearly-defined goal. But not all learning is like that. And sometimes holding on to the ‘clear goal’, as events unfold, is not the smartest thing to do. A famous study of art students, for example, found that the best pictures are produced by students who refuse to decide what they are trying to achieve until long after they have started painting. They insist on keeping an open mind, and are thus more alive to new, unforeseen possibilities that emerge as the painting progresses. They are continually reflecting not just on how to proceed, but on where they are going, and this enables them to be more creative than their more firm minded fellows.
Reflective . . .

Getting better at monitoring involves cultivating the little voice of self-awareness that keeps the strategic goals in mind, and is ready to change tack if it seems appropriate. A football manager contemplating making a substitution is monitoring, as is a teacher who decides to throw away the lesson plan on the spur of the moment and go with the interesting discussion which is developing. Students can pick up the habit and the skill of this kind of monitoring by being around people—teachers are ideally placed—who are able to model it, and who have learnt how to learn aloud, i.e. to externalise the thought processes of the vigilant monitor.

Reviewing means stopping every so often to take stock of progress, and to ensure that any emerging product—an artwork, an essay, a draft business plan—is on track.

Reviewing requires the ability to look at your own work with the critical eye of an editor, and not be afraid of the possibility that some corrections may be needed.

A writer may put a piece of work aside for a while and then come back to look at it afresh. An athlete may sit down and look at the video of her starting technique to see if any adjustments need to be made.

But reviewing is what the low-achieving maths student, for example, is very often unable to do.

Donald Schon called monitoring ‘reflection in action’, and reviewing ‘reflection on action’. Again, modelling and coaching can help develop these abilities.

Distilling

The third aspect of reflectiveness we call distilling (though it includes bottling and transporting as well). It involves mulling over experience, either alone or in discussion with others, looking for useful lessons and generalisations that can be drawn out and articulated, and which can therefore be consciously applied to new situations. A student teacher may lie in bed ruminating on the day’s ups and downs, sifting experiences to see what patterns emerge, and whether any ideas about ‘where I am going wrong’ and ‘how I might do it better’ come to mind. A group of school students might get together to chew over a playground incident, looking for things to be wary of in similar situations in the future.

Part of distilling is deliberately looking for new areas or contexts where learning lessons could be applied. It involves a conscious attempt to expand the range of utility of an insight, a concept or a technique. Having learned how to do mind mapping in one context, a student could be encouraged to look for other places where it could usefully be applied, for example. ‘I’ve learnt how to do mind maps in biology, in the context of animal habitats. Could I use them in preparing for a history essay, or in trying to sort out the different ways I go wrong in my algebra?’

This is a habit of mind that teachers need to cultivate if they want the skills of their subject to transfer more widely. Unless this process of transfer is given explicit attention, what has been learnt is likely to remain embedded within the subject matter, and its wider relevance will not be perceived.
‘Learning about learning has more impact than study skills. One programme used material from the history curriculum making it the object of reflection; another used generic learning skills materials. The students in the first group developed more advanced conceptions of learning, got better grades on essays and achieved better examination results.’

Chris Watkins, London Institute of Education.

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**A selection of ‘reflections’**

by a group of 12-year-olds at Northolt High School

Chris Watkins, London Institute of Education

‘I’m a great learner when I like the activity I’m concentrating on. If I don’t like it I don’t listen as much and I am easily distracted.’

‘I only really try hard for subjects I’m not good at. I like learning because I want a good job. I like doing practical work because I’m good at it.’

‘I have to try something and do it wrong to understand it. I don’t like to read instructions.’

‘I like to listen to the teacher and try my own ways. I like to work with a friend because they can help you, and I like the TV on or music. The TV has to be not too loud, also slow and smooth music.’

‘I learn better in the morning because I am all refreshed.’

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**Key points**

- Understand the process of learning
- Know about yourself as a learner
- Articulate how learning works
- Weigh up your learning strengths and weaknesses

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RESEARCH TELLS US . . .

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Reflective . . .

This kind of ‘chewing the cud’ of experience, in order to extract more explicit meaning and direction, is what people sometimes take the whole of ‘reflection’ to be. But in BLP it is just one aspect of it.

Meta-learning

The fourth aspect of reflectiveness is called meta-learning, and it relies upon a particularly important kind of distilling. It involves drawing out of your learning experience a more general, explicit understanding of the process of learning, and specific knowledge about yourself as a learner. Let’s take these two aspects of meta-learning in turn.

There is a wealth of research which shows that good learners know a lot about learning. They possess a vocabulary for talking about the process of learning itself, and are able to articulate how learning works.

Good readers, even quite young ones, are often able to tell you half-a-dozen things they can do when they come across an unfamiliar word: they sound it out, break it down into bits, re-read the previous sentence, read on to see if the meaning becomes clear, look at the picture and think about it, and so on. And so, more generally, for good learners. The more able they are to talk about their learning, the more likely they are to be able to apply their knowledge to new domains too: meta-learning increases generalisation.

And good learners also need an accurate sense of themselves as learners. Being a good learner means being able to take your own strengths and weaknesses into account as you are weighing up a learning challenge, or deciding on a course of ‘professional development’. In the business world, it is common now for people to take a job (if they are lucky enough to have a choice) partly on the basis of what they hope to learn from it. To make that decision well, they need not only to be able to plan their learning career, but also to base their decision on a realistic assessment of what they need and are ready to learn. Again, plenty of practice in thinking and talking about oneself as a learner at school is good preparation for the future.

The skills and dispositions of meta-learning can be cultivated simply by a teacher’s persistent use of questions such as ‘How did you go about finding that out?’ or ‘How would you go about teaching that to other people?’
The learning-power mind

Reciprocity

Key points
- Balance interactive and solitary learning
- Share and communicate skills and ideas
- Listen to understand
- Be independent in your judgement

interdependence | balancing self-reliance and sociability
collaboration | the skills of learning with others
empathy and listening | getting inside others’ minds
imitation | picking up others’ habits and values
The last aspect of a supple learning-powered mind concerns learners’ relationships with other people. Again both skills and inclinations are involved. Sometimes learning has to be a collaborative activity. Team work is the norm in many businesses, and the lone innovator is today the exception rather than the rule.

The ability to listen, take your turn, and understand the viewpoint of someone with whom you do not immediately agree, are all useful for the learner.

Even when collaboration is not required, it often makes good sense to try ideas out on someone else, or know whose brains to pick, and when. We break reciprocity down into four components: interdependence, collaboration, empathy and listening, and imitation.

Interdependence
Interdependence is not the opposite of collaboration but of dependency. Good learners know how to manage the balance between interacting and being solitary in their learning. The balance is often different at different phases of learning. And people differ in how much interaction they need, and at what stages. But however much they interact, good learners are capable of being independent in their judgement and in the extent to which they take control and responsibility for their own learning. They are autonomous even when they are collaborating. Many people talk about the virtues of independent learning, but they often seem to envisage the lone pioneer rather than the balanced person of BLP. The major stimulus to developing inner independence is being given manageable amounts of responsibility for choosing when, where and how to go about learning. This process can begin in the nursery, and continue into the office.

Collaboration
Collaboration involves knowing how to learn with others. It means being able to work as part of a pair or a team, in a situation where no one person is in possession of all parts of the puzzle, and where the sharing of information and ideas is essential. Collaboration means being willing to share, and having the skills of communication to do so effectively. In many primary schools, Circle Time, for example, is already being used as a way of cultivating the requisite attitudes and abilities. Classes can be constituted as a group of research teams, each of which has responsibility for finding out part of the answer to a whole-class project, and then sharing that research with the other teams.
Communities of inquiry

Students learn a great deal about all the four Rs, but especially reciprocity, in classrooms that are designed as ‘communities of inquiry.’ Ann Brown of Harvard University, for example, would set a whole class a juicy topic for a project, and then divide the class in different ways. Sometimes they would think and debate as a whole group. Often they broke into ‘research groups’, each taking a different aspect of the topic to investigate. Every so often, the class would reconfigure into ‘jigsaw groups’, comprising one delegate from each of the research teams, which shared problems and progress for the delegates to take back to their research teams. Across a wide range of measures of learning, thinking and communicating, Brown’s classrooms show impressive and long-lasting gains. Students learn more, but more importantly, they are building up their learning power.

Key points
- Cultivate the habit of listening
- Listen to generate empathy
- Pick up others’ ways of thinking and working

The value of discussion

Interviewer: Do you find other students’ opinions valuable?

Bill: Yes!

Interviewer: Even if they’re wrong?

Bill: Well, plenty of time I’m wrong. The discussion gets everybody involved. I’ve learnt more this way rather than copying off the board, it stays in your head more, you think about it.

Shane: If you’re not understanding something then they [the other students] may understand it better and say it in a different way to what the teacher says . . . They may ask questions you haven’t thought of.

from the PEEL Project, Victoria, Australia

‘I learned the way a monkey learns: by watching its parents.’

Queen Elizabeth II (allegedly)

RESEARCH TELLS US . . .

Communities of inquiry

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Empathy and Listening

Empathy and listening are core skills of reciprocity. We bracket them together because listening is the main medium through which empathy is generated and communicated. Students can quite readily be coached in the art of being a good listener, and can be given games and exercises that help them develop the ability to hear what someone else has said and, if necessary, play it back to them. Teachers sometimes complain that students will not listen, either to them or to each other; but the habit of listening can be cultivated in most classes inside a term. The most powerful way to do this is for the teachers to model good listening.

There is some suggestion that people who suffer from autism lack the ability to see the world through other people’s eyes. And it is also possible that many bullies have failed to develop the ability to read other people’s emotional signals. But for the vast majority of students, empathy develops with a little encouragement.

Imitation

Finally, imitation involves the disposition to pick up other people’s ways of thinking, learning, working and evaluating simply through taking part in joint activity with them, and seeing and hearing how they go about things. The great Russian psychologist Lev Vygotsky pointed out how much of our mentality—the ways we interpret the world, and think and learn about it—we have internalised from the significant others with whom we have worked, played or solved problems. Just as Darren was soaking up other people’s skill on the dancefloor, so

*We absorb the mental strategies and habits of those we admire and trust.*

Scientists have suggested that this semi-conscious mode of cultural transmission may play a more important role in human development than any amount of deliberate instruction.
The learning-power mind

Key points
- Pay attention in a variety of ways
- Develop a toolkit of learning attributes
- Use a range of reflective techniques

The learning-power mind
- being ready, willing and able to learn in different ways
- being ready, willing and able to learn alone and with others
- being ready, willing and able to lock on to learning
- being ready, willing and able to become more strategic about learning

RESILIENCE
RESOURCEFULNESS
REFLECTIVENESS
RECIPROCITY
The story so far

So far we have drawn a sketch map of the attributes of effective real-life learners, spiced with just a few hints about how these qualities and capabilities can be cultivated.

Good learners have what we called resilience: they are able to ‘lock on’ to learning, to pay attention to what is going on around them, in a variety of ways.

And they can maintain and restore their attention in the face of distractions and interruptions. They especially need to be able to tolerate the feelings of learning—apprehension, frustration and confusion—and the possibility of making mistakes, without getting upset and breaking contact with their learning too soon, or for too long.

Good learners use a varied toolkit of learning methods and attitudes to make them resourceful.

They are comfortable with the uncertainty that lies behind a questioning attitude, and they enjoy exploring and investigating. They are on the look-out for all kinds of links between what they are studying or exploring and what they know already—intellectual, personal and practical. They know how and when to use their imagination, and are willing to make use both of mental rehearsal of specific skills and situations, and to indulge, from time to time, in the more subtle and receptive art of reverie, which is the incubator of creativity. They can think systematically, analytically and logically when the time is right, and move fluidly between different modes of thinking to suit the learning task at hand. They are good at spotting, uncovering or fabricating all kinds of external aids and resources to help support learning, and off-load some of the cognitive effort onto smart machines like filing cabinets, spreadsheets and the internet.

Good learners are reflective in a range of different ways.

They can plan their learning sometimes, though sometimes they just let it happen without too much supervision. Being able to make good strategic decisions about learning methods and learning career is important. Good learners have the self-awareness to monitor their learning, and change course when circumstances change. They stop and take stock of their progress, and reflect on their products in a realistic and sometimes critical way. They think about what they are learning that might be useful in different settings, and explore in their minds how to disembed their knowledge from specific contexts, to increase its range and power. They know how to think and talk about learning, and are comfortable talking with others about the learning process. And they apply that knowledge to themselves, to develop an accurate and flexible image of themselves as developing learners.
Neuroscientists have recently discovered that there are neurones in the brain that are specially designed for imitation. Mostly, each neuron has just one particular kind of event that gets it excited. Everything else leaves it cold. But ‘mirror neurons’ fire off either when we perform a particular action ourselves, or when we see someone else do it. It’s as if we have a built-in predisposition to do what those around us are doing. Maybe that’s why yawning is so contagious. But it also means that we are designed to pick up the learning habits of those around us too. That’s why teachers need to be models of good learning. And why it is a good idea to learn with other people who bring different skills and perspectives to bear; those will gradually rub off on you.

Empathy

‘Empathy means entering the private perceptual world of the other and becoming thoroughly at home in it. It means temporarily living in his/her life, moving about in it delicately without making judgements . . . To be with another in this way means that for the time being you lay aside the views and values you hold for yourself in order to enter another’s world without prejudice.’

Carl Rogers, founder of client centered psychotherapy.

Key points

- Have a sense of independent judgement
- Join the give and take of collaborative learning
- Learn from other people
- Test your own ideas about learning

RESEARCH TELLS US . . .

Built to imitate

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The story so far . . .

And finally,

*Good learners balance their relationships with other people, being willing to be interdependent, without becoming either too dependent on others for support or feedback, or too aloof and unwilling to take criticism or to work as part of a team.*

They have a sense of independent judgement, and also the skills to share ideas and join in the give and take of a collaborative learning venture. In particular they can understand and respect the worldviews and positions of people different from themselves, even positions which they do not immediately agree with or find congenial. They can listen carefully to what others are saying, and co-ordinate their responses with the thrust of the conversation. And they are willing to learn from the way other people go about learning and problem-solving, picking up ways of thinking and perceiving as they work together side-by-side.

Some pitfalls

One thing is for sure: being a good learner is not a matter of being 'bright'. It's not to do with the amount of 'brains' you were born with. The old idea that \( \text{Achievement} = \text{Ability} + \text{Effort} \) is just plain wrong. People with high IQs or good degrees are not always good learners. They may know a lot, and they may have acquired certain rather specialised learning skills, but that doesn’t guarantee they will be all-round resilient, resourceful, reflective or reciprocal. In fact high achievers can sometimes be very conservative learners—more frightened of getting it wrong than a baby. We all know clever people who can’t see beyond the end of their nose.

In fact, being a good learner can’t be boiled down to any small set of concepts or simple tricks or remedies. Einstein said 'we should make things as simple as possible—but not more so.' And the effective mind is like a well-balanced orchestra, not a list of bullet points. So beware of little flow diagrams and check-lists that purport to tell you the whole truth. They may be a very good place to start thinking about learning—but they are an awful place to stop. Good learners test ideas about learning for themselves—even the four Rs!

We now have a reasonably comprehensive map of what the effective learner thinks, feels, believes, values and does. But the key questions are:

- Is it a good idea to try to build young people’s learning power? If so,
- Is it any of education’s business to do it? And if so,
- Can these habits and qualities be cultivated—especially in ‘ordinary’ schools?

These are the questions to which we now turn.