

# TEACH

*Using Hidden Gems from Research To  
Significantly Improve Student Learning*

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## **JIGSAW METHOD**

The Jigsaw Method was designed by social psychologist Elliot Aronson (1978). What follows is an abridged version of the information found on [Jigsaw.org](https://www.jigsaw.org/).

### **Jigsaw in Eight Easy Steps**

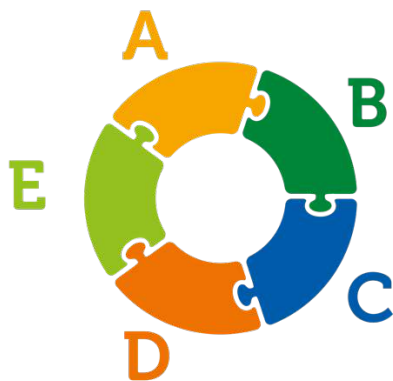
1. Divide your students into groups of five. These are the home groups.
2. Divide the activity into five segments. For example, if you want history students to learn about Anne Frank, you might divide a short biography of her into stand-alone segments on (1) her early life; (2) the period before going into hiding; (3) life in her hiding place; (4) arrest, deportation and death; (5) her legacy.
3. Give each home group one of the segments to read. Give them time to question each other, discuss difficult words and make notes.
4. Ask each student in the home group to number themselves one to five.
5. Person 1 from each home group then moves to sit with all the other number 1s. Person 2 sits with all other number 2s on another table and so on. These new groups are the away groups.
6. Each member of the away group takes it in turn to present his or her segment to the other students in this new group. By sharing the information that they are expert in, the whole group develops a picture of the full topic.
7. Once all of the information has been shared in the away group, the students can return to their home group and share what they have learnt about the other segments. This step is important for securing the learning. However, it is often left out. Taking the time for students to share with their home group gives them the opportunity to uncover valuable connections they made during the mixed groups time. These could also be shared with the whole class.
8. Each of the students now knows about one aspect of the topic in depth and the whole topic in breadth. A quiz can be given to help the students realise how much they have learnt about the whole topic from their dialogue with each other.

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Batdi's (2014) meta-analysis showed that Jigsaw is an effective intervention for increasing interdependence between students and fostering pro-social behaviours that increase trust and social connection.

More recent research has focused on its strong effects on academic learning and has largely overshadowed the original purpose of improving social interactions and inclusion.

Strange though, given the magnitude of effects – socially as well as academically – that Jigsaw is not already used in every school around the world! Maybe your quest to improve equity for your students can be the basis for changing this?



**ALL GROUPS READ THIS ...**

### Chapter 2

#### When You ENGAGE Your Students, Their Learning gains PURPOSE



Students are engaged in learning when their thinking is focused on the topic, action or meaning that is relevant to the progress you wish them to make. With engagement, the chance of progress is high; without it, learning will be limited.

When your students are engaged, they have a good chance of making progress. If not, then ... well, who knows? They might still learn *something*, but it is unlikely to be the 'thing' you want them to learn! So, where better to start this book than by looking at some of the best ways to engage more of your students more of the time?

The strategies I go into most depth about are questioning and dialogue. Both are relevant to every phase of education and in every curriculum area.

The first is common in classrooms; the second less so. Their *effective* use, however, is all too rare. So, I will help you to put that right.

### PURPOSE

- ✓ Engagement matters: the more students feel active and interested in their learning, the more they fulfil their potential (Csikszentmihalyi, 1990).
- ✓ When students are engaged in their learning, they are thinking about, and processing, the information they need to attend to make good progress.
- ✓ However, Berry (2023) found that teachers' beliefs about engagement were more to do with students' 'doing the work' and displaying signs of attentiveness than about the focus of their thinking.
- ✓ Students are more likely to engage when classroom activities are authentic, allow freedom of exploration, and demand effort, concentration and skill.
- ✓ Two strategies that cause students to think more and therefore engage more – and are relevant to all curriculum areas – are questioning and dialogue. These are explored in-depth in this chapter.

### WHAT TO NOTICE

- ✓ **Notice who engages:** students engage for approximately 50% of a lesson (Yair, 2000). One third focus more than that, answering questions and attending to their learning. Alas, an equal proportion do the exact opposite.
- ✓ **Look beyond the façade:** many students give the illusion of engagement. They nod, they smile, they stick their hand in the air (only to drop it when you look their way). Other students are too busy thinking about their learning to pay attention to classroom etiquette. If we want to boost engagement, we need to pay attention to what our students are thinking about.
- ✓ **Notice your sample size:** trying to identify how well a group of students are engaging by taking responses from just a handful of students is a poor way to make decisions. Forget hands up; forget cold calling; there are far better ways to determine student engagement.
- ✓ **Notice your pace:** the rate of questioning and the short wait times in a typical classroom are not conducive to thinking. If we want our students to engage, we need to slow down!
- ✓ **Notice peer-to-peer talk:** students rarely know how to talk and think together effectively (Wegerif & Scrimshaw 1997). Some engage in cumulative talk (full of platitudes but little critical thought) and others in disputational talk (competitive browbeating). Whereas, if students are taught to engage in exploratory talk (using critical and collaborative thinking), their social, emotional and intellectual development improves, and their engagement rises.

### TIMING

Strategies such as effective questioning and exploratory talk will boost student engagement, but they shouldn't be used all the time. Questioning is best used when you want to understand what your students are thinking about and, therefore, what they are engaging in. Dialogue, on the other hand, is more appropriate when you are ready to hand over responsibility to your students for monitoring and encouraging their own – and each other's – engagement.



2.0 What Is Student Engagement?

2.0.1 The Power of Story

2.0.2 What Gets in The Way of Student Engagement?

2.0.3 What Next?

## 2.0 What Is Student Engagement?



Student engagement means whatever they are thinking about. Reading without thinking about what they're reading is not engagement. The same goes for listening, watching, doing. Engagement, in effect, is 'thinking about'.

I took my eldest daughter for a hospital appointment yesterday. On the way home, I suggested that she drive so that she could get some more practice before her forthcoming test. The route we took went past the village where she spent her first 11 years, and yet she didn't know the road at all! Every turn and every roundabout were as much a surprise to her as if she were driving at the other end of the country. We must have walked, cycled or otherwise travelled those same roads hundreds of times, but she just didn't recognise them at all. The moment we stopped, she remembered the surroundings very well – but the road, to her mind, was uncharted.

Then again, why would she remember the road as a *driver*? She had never had to drive it before! She had only ever been a passenger. She could remember where her friends lived, where the park is, which route she used to walk to school. She has fond memories of riding the adjacent cycle path and remarked knowingly about the new buildings that hadn't existed a few years ago. As for the road though, it was totally unfamiliar to her. Not because it was new to her, but because she had never had to think about it before. As a passenger – and a child passenger at that – she was able to travel the road without thinking. She had never had to engage with the road in the way she needed to yesterday.

Engagement, then, means 'thinking about'. Thinking about meaning. Thinking about next steps. Thinking about what is important, relevant or urgent.

Making connections, formulating questions, trying to make sense of things that don't make sense. Wondering what others are making of it all; worrying about what is expected of you. All of this is engagement.

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So, what is ‘student engagement’? Actually, the research is mixed. Not because researchers can’t agree about its importance – they all agree engagement *is* vital if students are going to make good progress in their studies; what they don’t seem to agree on is the *definition* of engagement. Some talk in terms of engaging in school life, some in terms of academic engagement, others about engaging in completion of assignments and the earning of credits. Many researchers propose a two-dimensional model that includes behaviour (for example, active participation, effort and positive conduct) and emotion (for example, feeling positive towards schooling). Some add a cognitive dimension that includes self-regulation, investment in learning and deliberate use of strategies (Archaumbault et al., 2009).

This book is for teachers. So, in this chapter, I focus on ways to engage students in classroom activities. When I work with leaders, I take a broader approach looking at students engaging in the life of the school within and beyond the school gates. Here though, I recommend ways to boost your students’ engagement in terms of class participation, investment in learning, effort, self-regulation and use of strategy. Then, in [Chapter 5](#), I add ways to foster engagement in terms of self-belief, self-efficacy, sense of belonging and a belief in the value of learning.

Interestingly, in a recent study involving 319 high school teachers from across a southern state in the USA, participants were asked to rank the importance of seven characteristics affecting the professional respect of their colleagues. The options were high test scores; students going onto prestigious colleges; being popular with students; having an advanced degree or qualification in their subject; having an advanced degree or qualification in education; being well organised; and inspiring enthusiasm. Overwhelmingly and consistently, the teachers ranked inspiring enthusiasm for learning far higher than any of the other six characteristics. 97% placed it in the top three and 81% ranked it as the highest priority of all (Hecht, Bryan & Yeager, 2023).

### Looks Can Be Deceptive

If engagement is a continuum then it’s quite obvious when someone is at either end of the scale: when they are super engaged or totally disengaged. What though might we notice if someone’s engagement is in the middle? When engagement is ‘normal’?

There are exceptions of course, but this is where lessons tend to be: in the middle band of engagement. When I was about eight or nine, three of my teachers burst into the room unannounced and enacted a bank robbery. Every single one of us were absolutely rapt. So much so, that I can still remember the surprise and fascination more than 40 years later. That improv, however, only lasted five minutes, after which we all had to write creative stories about – yes you guessed it – a bank robbery. I’m pretty sure our engagement waned at that point! And could you imagine if they did the same thing repeatedly? Very soon, their imprints would have been consigned in our minds to the elephants’ graveyard of engagement.

So, yes the harsh reality is that school lessons don’t tend to be super engaging (the lessons *you* teach being the exception, of course). It is therefore important that we have a sense of what engagement is like when it is normal, and what we can do to boost it just a little bit (assuming of course that no lessons are turgid because, if they are, then engagement needs a whole lot more than a little boost!)

When we think about ‘normal’ engagement, one problem we face is that looks can be deceiving. Many teachers I meet assume they know which students are engaging and which are not but are their judgements reliable?

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How many times, for example, have you given the impression of engaging with someone only to realise you haven't taken in a word they've said? Or had to retrace several pages of a book because your eyes followed the words, but your mind wandered elsewhere? (please tell me you're not doing that right now). Or you've stared at a screen for ages without processing even a fraction of the information on it, no matter how beautifully presented or high octane it was.

So, what can look for; and maybe even more importantly, what can we ask for from our students? Appealing to them to 'engage please!' is probably not enough.

Here is what the research is telling us.

### **Please Pay Attention**

The absolute classic petition in every classroom: pay attention! If your students don't pay attention, they won't learn. It's as simple as that.

Something interesting, surprising, thought-provoking or odd can help to grab their attention. The same, of course, could be said of threats (perceived or otherwise) but we don't want to encourage that kind of provocation because a fight or flight reaction will *prevent* learning rather than stimulate it.

So, use the formula, 'do something (positive) to provoke attention so that they will learn' is the way to go. Right? Well, not exactly because there is considerable evidence that attention *sometimes* leads to learning and *sometimes* doesn't. It depends on what your students' attention is directed towards.

A classic example is asking students to draw, colour-in and label a diagram of the eye. Enquire what they have learnt about the eye and for many, their memories will be vague because their attention was on their artwork, not on the biology or terminology. So, an edited formula of, 'do something (positive) to provoke attention on the 'thing' that you want them to learn' is more accurate. Involving an element of creativity, active participation or quirkiness is likely to boost engagement but make sure attention is aroused towards the thing you want them to learn.

### **It's Been Emotional (Vinnie Jones, 1998)**

Our memories are most vivid when they are connected to emotional reactions. My clearest memories of childhood are trapping my thumb in the swing gate on the first day of school; the thrill I felt when making the whole class laugh; and the pure escapism of leaving the mourning adults behind at my mother's funeral so my cousins and I could throw spinning jennies in the air.

Of course, I wasn't trying to learn during any of these events; in fact, I've tried as hard as I can to forget some of them. In school though, the main purpose *is* learning, so In what ways can emotions support our students' learning?

Staff-student relationships play an enormous role in this regard. Making our students feel welcome and valued in class will go a long way to attaching positive emotions to their learning. The same can be said of the feelings involved succeeding, particularly if they do so against the odds (see my explanation of the 'eureka' moment in [Section 3.8.3.6](#)).

Before I lose any old-school mathematicians reading this section, don't worry – learning doesn't *have* to make our students feel warm and fuzzy. It's nice when it does (remember how excited you got when you first came across Euler's Identity!) but it's not strictly necessary. As Daniel T. Willingham, Professor of Psychology at the University of Virginia, writes: "If memory depended on emotion, we

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would remember little of what we encounter in school. So the answer ‘Things go into long-term memory if they create an emotional reaction’ is not quite right. It’s more accurate to say, things that create an emotional reaction will be better remembered, but emotion is not necessary for learning” (Willingham, 2021).

### Familiarity Can Be Engaging

When students recognise a topic then they are likely to engage more. This familiarity helps them know what to pay attention to, what is relevant and what is (probably) coming next. These are some of the reasons why I highly recommend using preview strategies, as described in [Section 6.1](#).

Of course, there is the proverb ‘familiarity breeds contempt’ but I would suggest it would be more precise to say, ‘over-familiarity breeds contempt’. If your students think, ‘oh no – here we go again’ then that is likely to disengage them; but if they think, ‘oh hang on – I know a bit about this ...’ then that should lift engagement.

We do have to be careful nonetheless, that we don’t mistake familiarity for knowledge. I make a similar point in [Section 3.4.2](#) when warning of the false sense of security that comes from students reading over their course notes multiple times before an exam.

A good example of this is with flags. Personally, I enjoy a school hall decorated with multiple flags representing the diversity of the students enrolled. Any celebration of, and respect for, multiculturalism is fabulous as far as I’m concerned.

However, I have an embarrassing admission to make. Years ago, after working closely with every school, preschool and public sector organisation in Florø, Norway, I was invited to a staff party. During proceedings, they held a quiz, and one question was, which of these ten flags is the Union Jack? Sounds like an easy question to answer for this British citizen, particularly as I was the only one amongst 400 Norwegians. Problem was the ten flags all looked almost identical. There weren’t 10 flags from 10 different nations; there was one UK flag and then nine slightly amended versions! Some had the Saint Patrick’s Cross from Northern Ireland running high from top right to centre and then low from centre to bottom left; others had the red line’s position on the white background positioned differently. The same goes for the line that runs top left to bottom right.

Now, it would be fair to say the UK isn’t a flag waving nation – at least not compared to some of the other countries I work in – but I must have seen the Union Jack a thousand times. Yet, I still couldn’t pick the correct one out of a line-up. Most of the locals could, but this solitary son of England failed miserably. It’s similar to the opening story about my eldest daughter driving on a road she’d travelled a hundred times. She had never needed to engage with the road for that purpose before, so her ‘engagement’ wasn’t the right type of engagement.

So it turns out, there is engagement (*falsetto*) and engagement (dramatic voice). The question is, what sort of engagement do you want your students to engage in?!

Returning to the example of asking students to draw, colour-in and label a diagram of the eye that I mentioned earlier. This would be a worthwhile assignment *if* you want your students to engage in elements of art such as colour, form, line or shape; less so if you want them to engage in the names and relationships between the 12 parts of the eye.

If the latter is your goal, then I would suggest something more like this:

- Give each group a plain picture of the eye (without labels).

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- Also provide a set of 15 cards for each group. Twelve cards should have a part of the eye written on them (for example, the first three cards could have cornea, iris, lens). The three 'spare' cards could have spurious terms such as glasses, in the public eye, and a bird's eye view.
- Now, ask groups to place the labels wherever they think they should go on the blank diagram (using their prior knowledge and guesswork).
- Every so often, pause the groups and ask them to share their ideas about one of the labels. After taking some responses, confirm which answer is correct and have each group lock that answer in. This will help them to place the others by a process of elimination.
- Make it enjoyably competitive so as to add to their engagement.
- Once you have revealed the correct version, show some weird, wonderful and funny images of different species' eyes on the board. Ask them to spot which parts of the eyes are visible, enlarged, hidden and so on. Doing this *after* the quiz serves two purposes: 1) having the terminology in their minds before they look at the different examples will help them to consolidate their new knowledge rather than simply marvel at the strangeness of the eyes, and 2) engagement is most like to wane in the middle of a lesson so rather than starting with the weird and wonderful, keep it up your sleeve until concentration levels are at their lowest.

As Willingham says in his 'Ask The Cognitive Scientist' series:

"Teachers often seek to draw students in to a lesson by presenting a problem that they believe interests students, or by conducting a demonstration or presenting a fact that they think students will find surprising. In either case, the goal is to puzzle students, to make them curious. This is a useful technique, but it's worth considering whether these strategies might also be used not at the beginning of a lesson, but after the basic concepts have been learned. For example, a classic science demonstration is to put a burning piece of paper in a milk bottle and then put a boiled egg over the bottle opening. After the paper burns, the egg is sucked into the bottle. Students will no doubt be astonished, but if they don't know the principle behind it, the demonstration is like a magic trick—it's a momentary thrill, but one's curiosity to understand may not be long lasting. Another strategy would be to conduct the demonstration after students know that warm air expands and that cooling air contracts, potentially forming a vacuum. That way they can use their new knowledge to think about the demonstration, which is no longer just a magic trick." (Willingham, 2021)

### 2.0.1 The Power of Story

There is one way to boost engagement that stands above all others, and that is storytelling. So much so that psychologists sometimes refer to stories as 'psychologically privileged'. Our minds seem to engage with, and remember, stories much more effectively than any other type of information we come across.

In my second year of teaching, I was invited to a leaders' conference. I don't know why I got to go so soon in my career; maybe everyone else had a hair appointment. Our wonderful after-dinner speaker, Gervase Phinn, began with a story from his school inspection days. Back then, inspectors were supportive, kindly folk who thought it more illuminative to mix in with the students than to peer over the top of a clipboard from the back of a classroom. One morning, Phinn had offered to read a story to some of the five-year-olds. Seeing as this school was in Cumbria, he thought it a nice touch to read a story from the region's most famous daughter, Beatrix Potter. As he reached the point in which Peter Rabbit gets himself stuck in Farmer McGregor's field, he asked the children what ought to happen next. 'Shoot it!' the children cried; 'Yea kill him! Rabbits are pests. They should be shot.'



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I'm still laughing about that story today, and I remember the point to it too: know your audience! Phinn was from Rotherham, an industrial town, whereas his audience were farmers' kids, living on the outskirts of the Lake District National Park. One or two of them might even have been descendants of miserly old McGregor! Know your audience indeed!

Story has the power to connect; it creates the opportunity to weave information and ideas into a narrative that engages the listener's emotions and energy. If I meet someone who has read one of my earlier books, eight times out of ten they will mention one of the stories I've included. If they've heard me make a presentation, those chances increase to 9.5 out of 10. Ironically, I haven't included as many stories in this book, with the exception of this section. Not because I've fallen out of love with the power of story; nor because I have run out of tales to tell (as my kids will surely testify). It's mainly down to two reasons: 1) this manuscript already runs to 100,000 words so I need to cut something somewhere! 2) I see this book as the accompanying footnotes to my presentations, offering details of research and lots more cross-curricular examples to add to the strategies I recommend.

Besides, too much of a good thing becomes a bad thing. I've thoroughly enjoyed books and presentations from well-known author-consultants, but I'm never really sure what the audience is supposed to take away from an 'edutainer' pitch that is story after story after story. If they're offering the after-dinner speech then great: entertain us! But if it's part of the main programme then surely a key goal is to lift our gaze from the chalkface to consider how we might be even effective? Yes, please give us a collective pat on the back and a sense of encouragement, but also share some of the most up-to-date and impressive research that might cause us greater gains for less stress. Weave some stories into this and we'll all remember it more.

I think the same can be said for classroom teaching. We can't *only* tell stories! We should certainly use them to engage and connect. Use them to weave a compelling narrative, but don't only tell stories.

Most stories follow five steps. I've shown these below. Each step is accompanied by a description of the ways in which I see these fitting with the structure of a lesson.

### **Set the scene**

Stories typically begin by setting the scene, situating it in time and space. In the context of a lesson, this could be connecting to a 'big question' or overarching topic. It can also include the basic information they will need (see my earlier suggestion about teaching the parts of an eye). If you are following the Learning Pit structure (see [Section 3.8.1](#)) then this relates to step one: sharing first thoughts about the central concept.

### **The incident**

In a story, something happens that causes significant change. In a lesson, this should be a thought-provoking provocation that causes your students to question their assumptions or think differently about the topic. Get this right and you will notice a significant boost to levels of engagement. In terms of the Learning Pit, this is when cognitive conflict is created to take your students into the pit.

### **Rising action or crises**

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Following the incident, events occur in a story that increase the tension; further details about the setting and characters are revealed. In a lesson, this is the perfect time to use questioning to provoke your students into thinking about the problems, their causes, their effects, personal responses to this and so on. This relates to deepening the inquiry and taking your students further into the Learning Pit.

### The climax of the story

This is the big event or payoff in a story; it's what we've all been waiting for. In a lesson, it should be the point at which everything becomes clear; when students have their 'eureka' moment (see [Section 3.8.3.6](#)). They should now know why the effort was worth it and be more able to articulate their learning. The dialogue strategies that I share in [Sections 2.4 to 2.7](#) lend themselves brilliantly to this part of a lesson.

### The resolution

In a story, this covers the aftermath. In a lesson, it should include metacognition (how and why did we think the way we thought, and what would work well next time) plus connections to the next steps in your students' learning. With the Learning Pit structure, this is stage four: reflecting, applying, adapting.

I don't pretend for a moment that this structure covers all eventualities. Some lessons will lend themselves much more obviously to the power of narrative than others. However, the principle still stands: the more you are able to structure the lessons you teach along the lines of a narrative, the more your students are likely to engage and therefore remember their learning long into the future.

A similar summary can be offered for this whole section. What I've covered doesn't do much more than scratch the surface of engagement. Classrooms are too complex for there to be one approach, and staff-student relationships too pivotal for research to provide all the answers to how to engage students.

However, what we do know is that the characteristics I've described have been shown time and again to boost engagement in most contexts, much of the time. That's not all contexts, all of the time but it's a pretty good starting point.

Before I go more deeply into the two engagement strategies that are most generalisable across the curriculum (questioning and dialogue), I think it's worth giving a short summary of the reasons why students do *not* engage in learning. After all, reminding ourselves what we're up against can be a useful springboard for imagining what we might do to improve matters.

## 2.0.2 What Gets In The Way Of Student Engagement?



**Never underestimate a teacher's ability to engage their learners, for they do so against the odds. The forces of distraction affect and seduce students at every**

Engaging your students is one of the most challenging tasks of being a teacher. There are just so many influences competing for their attention. Involvement in leisure and peer-group

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activities, preoccupations with social media, and commitments outside school are the distractions most frequently mentioned by teachers. But there are others. Many others.

These can be grouped into four broad categories.

1. External concerns

A broad and diverse category covering all non-classroom issues. These include family issues, responsibilities as carers, work obligations, training schedules and social lives.

⇒ Students wondering what's going on – and what they need to take care of – outside the classroom.

2. Self-consciousness

Students focusing on themselves rather than on instructional activities. Examples include health (including mental health) concerns, concentrating on appearance, and being deliberate about the impression they're giving others.

⇒ Students thinking to themselves, 'what am I doing and what impression am I giving others?'

3. Surroundings

Covering the wide range of distractions created by peers, noise and visual stimulants, social hierarchies and conventions, and classroom visitors.

⇒ Students considering who and what else is in the room and how they should respond.

4. Interactions

This covers the times in which students are observers of interactions without being involved in them directly. It includes taking notice of how you interact with others, how their peers respond to each other, thinking about group dynamics and so on.

⇒ Students observing the ways in which other people in the room respond to each other.

No wonder it is so difficult to engage students! In many ways, it's a minor miracle that we ever manage to.

In fact, not only will all the examples above get in the way of attentiveness, but many students will *also* be dealing with processing issues. Those with additional learning or language needs are the most evident perhaps, but anyone unfamiliar with your classroom conventions or having an off day will face additional obstacles requiring extra effort to overcome before they can pay attention.

So, don't be too hard on yourself when your students don't appear to be concentrating. Don't be too hard on them either. I don't mean to suggest taking a nonchalant approach. After all, we *want* our students to engage, and we need to do what we can to increase its likelihood. But know that creating sustainable experiences that engage all your students all the time is a Sisyphian task.

The Gallup Student Poll in the USA bears this out. It has tracked the opinions of more than 6 million students in grades 5-12 from 8000 schools across 1,400 districts. They have found that:

- Less than half (47%) of the students polled are engaged with school.

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- Less than one third (29%) are “not engaged”.
- Almost a quarter (24%) are “actively disengaged”.
- Engagement is highest amongst fifth graders (74%); by middle school, this has dropped to a half and by tenth grade to a third of students engaged.

“Gallup discovered two items that had a powerful connection to engagement. Students who were able to ‘strongly agree’ with the statements “My school is committed to building the strengths of each student” and “I have at least one teacher who makes me excited about the future” were 30 times as likely to be engaged at school when compared with students who strongly disagreed with the same items.” (Gallup.com, accessed 18 May 2023).

These statistics at first seem discouraging, but it is worth remembering that most of us work with students who, in general, are required by law to attend school. Many would not attend – or stay on later – at school if they didn’t have to. So, to have even half of our students engaging at any one time is a good start. We would like it to be better of course, but it’s not a terrible start (even if the enfants are terrible).

Returning to the Gallup site for a moment, I found two connections particularly interesting. The first is that engaged students are 4.5 times more likely to be hopeful about their future than their actively disengaged peers. So, for those who think engagement is fleeting and rather mood-based, this doesn’t disprove that theory, but it at least says engagement exerts some influence later.

Secondly, although we have every right to worry about the general lack of student engagement shown in Gallup’s findings, it seems adult engagement is even worse! Only one third of staff (33%) reported being engaged; half (51%) reported not being engaged; and most worrying of all, a resistant 16% were actively disengaged!

That is a can of worms I am not going to open in this book! So, moving on then ...

### 2.0.3 What Next?

Engaging students is not straightforward. There are just so many influences competing for their attention. It’s not impossible, of course. In most classrooms, most of the time, a significant number of students are already engaged. It would be fabulous though if more students engaged more of the time, and if this engagement was in their learning rather than in other things. So, that’s what the rest of this chapter is about.

I have chosen to focus on two strategies for engagement: questioning and dialogue. According to the research I share later, these two approaches are among the most effective ways to boost student attention and subsequent thinking about their learning.

Questioning has two main purposes. The first is to call on students to be more cognitively active. The second is to determine when to move on to the next part of the lesson. Both are central functions of engaging students.

Dialogue teaches students how to think together; how to collaborate effectively on tasks; and how to make connections within and across subjects. It is one of the best ways to encourage intrinsic motivation.



## 2.1 Use Questioning to Boost Engagement

### 2.1.1 Stop Evaluating, Start Exploring

### 2.1.2 Asking the Right Type of Question

### 2.1.3 Too Many Questions, Not Enough Time

## 2.1 Use Questioning To Boost Engagement



Questioning is among the best ways to direct thinking and boost engagement. Your students' responses offer insights that allow you to adjust subsequent instruction to better meet their needs. As such, it is one of the most important pedagogical techniques.

Questioning can be likened to the dynamic flow of a river, where the exchange of ideas and perspectives is fluid, continuous, and rich with possibilities. When used effectively, questioning can draw attention to whatever you want your students to think about. This, in turn, engages them in the 'right' thing, whether that is a key concept, significant meaning, cause and effect, or technique that you wish them to learn.

However, the most common approach to questioning isn't very effective at all! Indeed, it only tends to engage one third of students (Cazden, 2001). That is not a great return for any strategy, much less one with a primary function to ... engage students!

Referred to as the I-R-E pattern (Mehan, 1979), the most common form of questioning in education follows this three-part sequence:

**Initiate:** the teacher asks a question.

**Respond:** a student answers.

**Evaluate:** the teacher confirms the student has answered correctly or, if not, asks a second student to answer.

This approach can be useful for checking factual knowledge or recall, but that's about it.

The one third who pay attention and offer answers are confident in their own abilities, confident in the current subject matter or confident amongst their peers. They are willing to engage because the odds are in their favour. Either they answer correctly and are praised for it or, if they get it wrong, will still receive a favourable response for trying. The other two-thirds keep their heads down – or employ strategies to avoid being asked. Giving an answer in front of everyone else is just too risky for their egos.

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This IR-Evaluate approach tends also to be accompanied by a lot of teacher talk. Courtney Cazden (2011) found that teachers fill as much as two-thirds of any questioning sequence when using this approach. Thus, the one third of students who are likely to offer an answer have just one third of the discussion time in which to do so. I'm no mathematician, but even I know that's a very low rate of engagement!

The good news is that recent studies have shown that student engagement increases dramatically when interactions are more dialogic (Mercer & Wegerif, 2002; Gibbons, 2002; Nystrand et al., 1997). This is when students are actively involved in the co-construction of meaning.

This means turning the classic IR-Evaluate into a more dialogic Initiate-Respond-Explore.

### 2.1.1 Stop Evaluating, Start Exploring



**When questioning your students, use an IR-Explore approach. Do not evaluate their answers. Instead, encourage elaboration, exemplification and reasoning.**

When moving to the much more effective 'IR-Explore' approach, the first principle is to neither validate, confirm or refute students' answers. This comes with the caveat – *in so far as possible* – because there might be occasions when it is disingenuous not to. But, in principle, you should give no impression that their answers will be publicly evaluated.

I find the best response is to begin with, 'interesting' and then to follow it up with one or more of these questions ...

- ↔ Can you tell us more?
- ↔ Could you elaborate?
- ↔ Could you give us an example?
- ↔ Could you offer a supporting reason?
- ↔ Can you explain your thinking?
- ↔ Are there any other terms / phrases you could use?
- ↔ Do you think that would always be the case?
- ↔ When might that work / not work?
- ↔ Are there any exceptions?
- ↔ How about if ...

These are *not* probes for cross-examination! They are invitations to explore. Your purpose is to encourage elaboration and wonder, not to fluster or confront. Tone of voice and body language are therefore also important. Give the impression you are genuinely interested in what your students have to say and the reasons they have for the way in which they think

At times, you might not want to ask a follow-up question. Instead, you might use 'encouragers' such as 'uh-huh' or a 'go on'. Whatever helps to elicit more thought from your students, more openness, more inquiry, will be a good thing.

Also look for ways to invite others into the dialogue. Seek out supporting ideas, questions and connections by asking these sorts of questions.

- ↔ Can anyone think of a counterexample?

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- ↔ Did anyone else think something similar (could you explain)?
- ↔ Is there anyone who thought something different? Could you draw comparisons?
- ↔ Who would like to add to what [student] said?
- ↔ Could anyone offer an example of counterexample for what [student] suggested?

Don't be discouraged if some of these questions don't work straight away. Although, IR-Explore will have a better impact on student engagement than the more traditional IR-Evaluate, it still won't engage all your students on every occasion. Outcomes are likely to be much better than the one third of students engaging one third of the time that Cazden (2011) found, but you still won't see 100% students engaging 100% of the time. It is better but it is not perfect.

As an author-consultant, I often demonstrate IR-Explore in classrooms. I think this is an important 'walk-the-talk' offer to make. Give me any class of students, any age, studying any subject and I'll show you some of the ways to boost engagement and deepen learning. Staff watch how their students interact and then we talk about the learning opportunities afterwards.

Having run these sorts of demonstration lessons many hundreds of times with students aged 3-19, you can imagine I have been asked lots of questions about the approach. Some of the most frequently asked ones, together with my answers, are as follows.

**Is Initiate-Respond-Explore suitable for all students?** Generally speaking, yes. Although there are exceptions: those who find large group situations stressful are likely to struggle, as are those who need or prefer more processing time. There are ways to mitigate these circumstances though, as shown in [Sections 6.3.1 and 6.4.1](#).

**How long should an IR-Explore sequence last?** However long suits the occasion. When I run a demonstration lesson, the IR-Explore sequence lasts for the whole session but that is more for the benefit of the observers than for the students. In more usual circumstances, I use it as part of a range of strategies to engage my students in their learning. For example, I might spend 15 minutes at the start of a lesson using IR-Explore to encourage my students to connect to their prior learning; then later in the topic spend 20-30 minutes digging deeply into the significance of key concepts. In between times, I use the approach when wanting to engage smaller groups of students in need of chivvying along. As with all pedagogical strategies, one size never fits all.

**Is IR-Explore always the best strategy?** No. But then again, no strategy is always the right strategy! Classrooms are just too complex and students too diverse to think of one strategy that will work every single time. You couldn't even say that IR-Explore is *always* better than IR-Evaluate. It is most of the time, but not always. The IR-Evaluate approach is like the quick-fire questions used at the beginning of a test. They give a quick sense of what our students know and don't know but they don't allow for nuance. They don't tell us what else our students think; what their assumptions and reasons are; which connections they can make; nor will we gain an insight into their understanding. We just get a quick yes-no, right-wrong check-up. That might be quite useful at times but remember – the public nature of IR-Evaluate sequences is stressful for many students, which is why so many disengage from it. Much better to take the more inclusive, more insightful and less stressful IR-Explore approach.

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**If I use IR-Explore, does that mean I have to avoid teaching content?** No, not at all! You need *something* to ask questions about, so it may as well be the topic or content you want your students to engage with. If you think it would be reassuring, then you could include facts or truths as a preface to your IR-Explore questioning. This might include confirming A and B are true before asking your students for thoughts about C. For example, ‘we know Hamlet was the Prince of Denmark and that the ghost of his father tells him to seek revenge ... so, can anyone add detail to this?’ or ‘we know that all whole numbers are integers, so how many numbers can we think of that are integers but not whole numbers?’

**Does IR-Explore run contrary to facts and truths?** I get that some people have misgivings about the first rule of IR-Explore being to avoid confirmation or rebuttal of students’ answers. However, that is not the same as saying we should take a laissez faire attitude by allowing anything and everything to go by unchecked. If, for example, a student was to make a racist, sexist or otherwise socially unacceptable comment then I wouldn’t hesitate to ‘evaluate’ it publicly. But when it comes to content-focused answers then there are many ways to avoid the usual evaluation approach. For example, you could ask others if they agree or have different ideas; you could ask for a rationale behind the answer (which normally results in the fault being identified, albeit in a periphrastic way); or you could ask for further explanation so that you provoke reflection and correction.

**Does IR-Explore work in every subject area?** Does questioning work in every subject? If your answer is the same as mine – yes, of course – then I would recommend thinking the same about IR-Explore. It lends itself more obviously to open-ended aspects of the curriculum – for example, when appreciating art, discussing literature, making arguments about ethics in science, or hypothesising about cause and effect in history and geography – but even in the subjects thought to be more ‘certain’, it can engage students more effectively than the traditional IR-Evaluate.

You probably won’t be surprised to know that the subject most cited by teachers as the least compatible with IR-Explore is maths. I happen to disagree – I think maths lends itself brilliantly to exploration – but I understand why people think this. So, here are a couple of examples that I hope will help.

Initiate: What is  $25 \times 9$ ?

Response: 225

Explore (sample of questions):

- How did you solve that?
- Did anyone solve it in a different way?
- How many ways could we solve it?
- Which strategies are quickest? Easiest? Most reliable? (Explain why)
- How could you explain what to do to someone who doesn’t understand multiplication?
- Could anyone show us how this could be drawn?

Initiate: Using a calculator, what is 25% of 30?

Response: 7.5

Explore (sample of questions):

- What buttons did you press to get your answer?
- Did anyone solve it in a different way?
- How could you solve the same problem without a calculator?
- What do you notice about 25% as a proportion of the whole?



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- How else could we write this?
- If I gave you some graph paper, could you solve it without the use of any numbers?

**Will IR-Explore work with my students?** I expect so, yes. Unless you work with classes of students with no formal means of communication, then I would proffer IR-Explore will work. Not perfectly, because no approach to engaging students does; but certainly better than the more traditional IR-Evaluate. There are caveats to this, and aspects of student needs that should be provided for – as described in the next section – but I'd be willing to wager that it will work. In fact, if you have the opportunity then invite me into your classroom and let's see if it will work with your students! If that's out of the question, then check out the short video clips on my website LearningPit.org, some showing IR-Explore in action.

### 2.1.2 Asking The Right Type Of Questions



**Stevens (1912) observed teachers in 100 high school classrooms in six subject areas and found that at least two-thirds of the questions teachers asked focused on recall of facts. More recent studies show very little has changed since.**

“The whole idea that students should always answer teachers' questions correctly is actually rather odd. If the students are answering every one of the teacher's questions correctly, the teacher is surely wasting the students' time. If the questions are not causing students to struggle and think, they are probably not worth asking.” (Dylan Wiliam, 2014)

Questions are typically classified by the level of cognitive demand required to answer them. The two best-known systems for categorising questions are 'open or closed' and 'higher or lower order'; the latter is more important and is generally explained in connection with Bloom's Taxonomy (1956). This is explored in detail in the next section.

Although it is worth thinking about categories of questions, it is perhaps even more important to think about the process of 'questioning'. After all, it could be more effective in teasing out your students' thinking to give a quizzical look or an 'encourager' such as 'uh-huh' or a 'go on' than it is to ask a perfectly formed, well timed question.

Early in my career, I cared a lot about the differences between open and closed questions. The PD of the day led my colleagues and me to believe it was better to ask open questions than closed. Open questions were defined as ones that seek long answers, cause reflection, and elicit opinions or feelings. Whereas closed questions were defined as quick and easy to answer, dealing in facts, and often resulting in a 'yes' or 'no' answer.

Sounds straightforward enough, but the more I cared about this, the more exceptions to the rule I found. For example, 'is democracy a good way to govern?' sounds like an open question that is seeking a longer answer supported by reasons. However, it can just as easily result in a yes or no answer. Whereas 'where are you from?' has the form of a closed question but could draw out a longer answer. For example, depending on who was asking and how much knowledge I suppose they have about my locality, personally I might answer in terms of the country I am from or the region or the town or even the neighbourhood. I

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might add something about where I was born and raised compared to where I live now or give an insight into where I most identify with (along the lines of the Māori concept of *turangawaewae*). I could even add a description such as rural, by the coast, on the edge of, halfway between, closest to, and so on. In other words, if I was so inclined, I could give a long answer to a seemingly closed question and I could give a yes-no answer to most open questions.

If this sounds obtuse, I don't mean it to be. It's just that early in my teaching, when I thought it important to ask only open questions, I was disheartened if my students gave short answers to my carefully crafted questions. Whereas, when I stopped worrying so much about the types of 'questions' I asked and concentrated more on the intent and direction of my 'questioning', then the process started to flow better. I still think there are some questions that are better than others for beginning an IR-Explore sequence (and these are shown in [Sections 2.1.5 and 3.8.2](#)), but I also know that I'm going to have to ask multiple questions to bring out the best in my students and these will probably be a mix of both open and closed questions. Added to that, a gesture or single word of encouragement can sometimes be more productive than even the most perfectly formed open-ended question that Socrates himself would have been proud of. Don't you think ...?

### Types of Questions



**Questioning that provokes higher order thinking leads to better learning outcomes. This engages critical thinking and problem-solving strategies and increases the likelihood that students will transfer ideas from one context to another.**

Questions serve a range of functions in education. They can be used to test knowledge or understanding ('Can anyone say what 'photosynthesis' is?'), to manage classroom activity ('Are you all ready now?') and to find out more about what students are doing ('How did you decide the roles each of you would take?'). They can also serve multiple functions at once, finding out what your students know whilst also refocussing their attentions.

When it comes to their form (rather than their function), Anderson and Krathwohl (2001) categorise questions as either 'productive' or 'reproductive'. These match with the terms higher order and lower order that are related to Bloom's Taxonomy (1956).

### Higher Order Questions Are Best

The most important distinction between questions is that those requiring higher order thinking skills (HOTS) lead to better learning outcomes. They engage students in critical thinking and problem solving and increase the likelihood that students will transfer ideas from one context to another.

- Critical thinking – requiring reasons, decision-making, generalisations, reflection and evaluation.
- Problem solving – meeting a goal that cannot be met using a memorised solution.
- Creative thinking – thinking of alternatives, making different assumptions, seeking novel interpretations and looking for unusual connections.
- Transfer – applying knowledge and skills learnt in one context into another. For example, learning how to use a Venn diagram in maths and then applying this understanding to help distinguish between metaphors and analogies in a literacy lesson.

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A meta-analysis of 14 studies found a positive relationship between the use of higher-level questioning during instruction and student gains on tests of both factual recall and application of thinking skills. (Redfield & Rousseau, 1981). Hattie has included this meta-analysis in his database and calculated an effect size of  $d = 0.73$ . There are seven other meta-analyses in the same category that bring the overall effect size down to  $d = 0.49$ . This is a significant effect.

The bad news is that research is unequivocal: many more lower order questions are asked than higher order, even though students learn significantly more from questions that stimulate higher order thinking.

More than a century ago, Stevens (1912) conducted the first systematic study of teacher questioning in the USA. He observed teachers in 100 high school classrooms in six subject areas and found that at least two-thirds of the questions teachers asked focused on recall of facts. More recent studies, including those by Sirotnik (1983), Klinzing & Klinzing-Eurich (1988) and Nystrand, Gamoran, Kachur and Prendergast (1997) show very little has changed since.

Nystrand et. Al. (1997) observed 58 eighth-grade and 54 ninth-grade ELA classes in eight Midwestern communities in the USA. He reported that 64% of questions in the eighth-grade classes involved recall of facts, with the remaining 36% focusing on higher order thinking such as analysis, generalisation and speculation. The balance was better in the ninth-grade classes with 46% of questions provoking higher order thinking.

Questioning that is most likely to engage your students' higher order thinking skills include the following approaches.

### Problems

Posing problems with no single solution, or ones that have multiple pathways towards a solution, will require students to define, generate, select, hypothesise, implement and evaluate.

### Provocations

Posing provocative questions, statements or scenarios that will cause your students to consider, wonder, compare and contrast, explore and persist. Starting with 'what if' or 'how about' can help.

### Parallels

Asking questions that require your students to explain concepts using analogies, similes and metaphors.

### Rate of Questioning

Tamar Levin and Ruth Long estimated that teachers ask between 300 to 400 questions in a typical school day (Levin & Long, 1981). More recently, Christopher Tienken and his colleagues from Seton Hall University, NJ have published similar findings (Tienken, Goldberg & DiRocco, 2009) although Janet Clinton and Georgia Dawson (2018) put the estimate at 100 to 350 questions per day.

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If we ask that many questions in a day, just think how many we ask in a year! Of course, the number of days in a school year varies from country to country, but we can still calculate a range. Of the countries I work in, the USA has the fewest school days (ranging from 172-184 depending on the state) and Japan has the most (210 days). If a similar number of questions are asked by teachers in those countries (and that's a big 'if') then we are looking at between 17,200 to 73,500 per teacher per year. That hardly seems believable. Although a day working with kindergarten children would have you suspecting four-year-olds ask even more every single month!

The point is: teachers ask a lot of questions! Since these questions are typically used for two main purposes – 1) to find out if students are ready to move on to the next part of the lesson; and 2) to stimulate more active participation – it shows how essential it is to make our questioning strategies as effective as they can be. The role is such a pivotal one that it can't be left to providence.

If I scale down to the number of questions per lesson rather than scale up the number of questions per year, the stats don't become any less incredible. According to OECD data, the typical number of hours students spend in lessons each day is 5 hours. So, if we take the most recent estimate (from Clinton & Dawson, 2018) of teachers asking 100-350 questions per day, then we're looking at 20 to 70 questions per hour!

By far the best known and most cited research in this area comes from Professor Mary Budd Rowe (1986). She documented the astonishing speed at which teacher and student exchanges took place. By feeding the sound from hundreds of hours of in-classroom recordings into a servo-chart plotter she discovered that when teachers ask questions, they typically wait 0.9 seconds for students to start a reply (wait time one). If no reply is forthcoming, they repeat or rephrase the question. Then, after a student stops speaking, teachers begin their reaction or ask the next question less than one second later (wait time two).

This pace has got nothing to do with learning and everything to do with exhibition! No one can think at that pace. The most quick-witted can recall previously learnt answers but even then, how many times have you watched a quick-fire gameshow and been frustrated by someone else in the room or the contestant on the television beating you to it?

More importantly, this pace cannot possibly encourage higher order thinking. How can you consider meaning or interpretation, much less synthesise or evaluate alternatives if you have less than one second to do so?

Budd Rowe recommended a different approach, as she explained: "If teachers can increase the average length of the pauses at both points, namely, after a question (wait time one) and, even more importantly, after a student response (wait time two) to three or more seconds, there are pronounced changes (usually regarded as improvements) in student use of language and logic as well as in student and teacher attitudes and expectations. There is a threshold value below which changes in wait time produce little effect and above which (2.7 seconds) there are marked consequences for both teachers and students." (Rowe, 1986, p43).

### 2.1.3 Too Many Questions, Not Enough Time



Teachers ask 60-80 questions per hour (Tienken et al., 2009) and allow an average of 0.9 seconds for students to think before answering each one. (Budd Rowe, 1986)

Professor Budd Rowe's seminal work led to a recommendation to increase wait time – or thinking time – to a minimum of three seconds. Doing this, she noted, leads to significant effects, including ...

1. **The length of student responses increases** between 300-700%, even more in the case of at-risk students.
2. More responses are **supported by evidence**, explanation, logical argument and complexity.
3. The incidence of **speculative thinking** ('what about' and 'what if') increases.
4. The number of **questions asked by students**, and the number of experiments they propose, increases.

*"As a rule, students ask questions infrequently, and when they do, their questions are usually to clarify procedures and are rarely directed to other students. This situation changes dramatically when wait time increases to three or more seconds." (Budd Rowe, 1986 p44)*

5. **Student to student exchanges** increase and the prevalence of speaking via the teacher decreases.

*"Under very short wait times, students compete for turns to perform for the teacher. There is little indication that they listen to each other. Under the 3-second regimen, however, they show more evidence of attending to each other as well as to the teacher, and as a result, the discourse begins to show more coherence." (Budd Rowe, 1986 p44)*

6. **Failures to respond decrease.**
7. **Disciplinary moves decrease.**

*"Students maintained on a rapid recitation pattern show signs of restlessness and inattentiveness sooner than do students on the longer wait time treatment plan. At first this seems counter-intuitive to teachers. (However) ... protracted wait time appears to influence motivation, and that in turn may be a factor in attention and cooperation." (Budd Rowe, 1986 p44)*

8. The **variety of students participating** voluntarily in discussions increases; and the number of unsolicited, but appropriate, contributions increase.

*"Typically, six or seven students capture more than half of the talk time. Under the 3-second regimen, the number of students usually rated as poor performers who become active participants increases. This change in verbal activity gradually*

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*influences teacher expectations ... (Verbal competence appears to be a salient factor in teacher judgements concerning a student's capabilities)." (Budd Rowe, 1986 p44)*

9. **Student confidence** – shown by less approval seeking – increases.

*"Student responses are often inflected as though a tacit question such as, 'Is that what you want?' were attached to their statements. This reduces significantly when wait time is increased." (Budd Rowe, 1986 p45)*

10. **Achievement improves** on written measures where the items are cognitively complex. (Tobin, 1987)

In addition to these very impressive outcomes, positive effects on teachers were also noted by Budd Rowe.

11. Teachers' responses exhibit **greater flexibility and improved continuity** in the development of ideas as the questioning sequence progresses.
12. Teachers ask fewer questions overall but the quality increases with **more invitations to clarify, elaborate or find counterexamples**.
13. **Expectations improve** for the performance of certain students.

*"Previously 'invisible' people become visible. Expectations change gradually, often signalled by remarks such as, "He never contributed like that before. Maybe he has a special 'thing' for this topic." This effect was particularly pronounced where minority students were concerned. They did more task relevant talking and took a more active part in discussions." (Budd Rowe, 1986 p45)*

Reading through the rest of the research paper, together with subsequent studies by Ken Tobin (1987), Robert Stahl (1994), and Rothstein & Santana (2011), the following comments provide a useful annotation.

- A. Budd Rowe wrote about two key wait times: after a teacher asks a question (wait time one); and after a student answers a question (wait time two). All the research cited above notes that the impact of extending wait time two is particularly powerful.
- B. The gains are even more significant for at-risk and minority students. For example, Winterton (1977) found that minority students who were previously described by teachers as nonverbal contributed spontaneously twice as often during the longer wait time classes as did their counterparts in other, more typical science classes.
- C. All the researchers mentioned noted a threshold of 2.7 seconds, beyond which the effects are marked. Modifications to wait time beyond the 'normal' 0.9 seconds but less than 2.7 seconds show little change in the language and logic used by students.
- D. Stahl (1994) recommends switching the term 'wait time' to 'think time' so as to emphasise the purpose of the increased pause between one person speaking and another.

### Five Steps Towards Improving Thinking Time



**Extending wait time two (after a student has responded) is by far the most effective way to improve student engagement during questioning sequences.**

To ease the transition from short wait times (less than a second) to optimum wait times (3 seconds or more), I recommend the following steps.

- 1. Arrange the room so that everyone can make eye contact with everyone else.** This is easier said than done in many classrooms, but doing so can lead to many benefits. In a typical classroom talk situation, students address their teacher – even when responding to an idea offered by another student. Whereas, when it's easier to make eye contact with anyone in the room, the way in which students interact becomes more authentic.
- 2. Create an expectation for thinking time.** Whenever I run a demonstration lesson, I begin with an introduction along these lines: 'I expect everyone to listen to each other and to think. Notice that I didn't say 'listen and talk'. Of course, I hope that some people will speak but by far the most important aspect of this lesson is thinking. So, please think about the similarities and differences between the ideas someone is sharing compared to what you believe. Consider their point of view. Think about their reasons – and yours. Try to identify examples and counterexamples. Wonder 'what if'. Take time in this lesson to think deeply.'

'To help us do all this, we need to slow things down a bit. Give people thinking time. Unfortunately, most discussions tend to be quick fire with one person starting to speak the moment someone else has finished; sometimes they don't even wait for them to finish – which is hardly conducive to thinking! That's about showing off rather than considering ideas deeply. So, we're going to try to do better than that by giving people time to think. After someone has spoken, please wait three or more seconds before saying something. I don't want this to become a distraction – let's not count out loud or look at our watches! But please do be mindful of giving each other thinking time. You might find the silences a little awkward to begin with but as time goes on, we'll all get used to it and when we do, we'll do much better thinking together.'

- 3. No hands up.** Whenever possible, go for something much more subtle than hands up. My preference is for thumbs up, with hands resting on a table or lap. Hands up are just too distracting. This is particularly true if hands shoot up the moment someone has finished speaking; worse still if they hang in the air when someone is talking. The imploring grunts that younger students use to accompany their hands up plumb even further depths of distraction!
- 4. Ask good questions.** This sounds obvious, but make sure the questions you ask are worth thinking about! There's little point in giving your students thinking time if your questions require simple, repeated answers. The term mentioned in the research is 'authentic questions.' In every study and meta-analysis I've read, questions that were authentic lead to better learning outcomes. They are defined as those that evoke a variety of responses from students (because there is no pre-specified answer) and that allow teachers to demonstrate that they are genuinely interested in exploring students' ideas.

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Also aim for 'uptake': another term frequently mentioned in the research about questioning that is most effective for engaging students. Uptake is when questions incorporate earlier responses from students. For example, 'thinking back to [student A's] idea about this, together with [student B's] alternative suggestion, can anyone think of a time when these might ...' or 'what [student C] said was really interesting; let's all take some time to think about it and then in a few moments, I will invite someone to respond to their ideas.'

**4. (part II) Ask good questions ... that are authentic.** It all sounds straightforward: ask authentic questions that connect with your students' lives, show a keen interest in their reasons and examples, and build their earlier ideas into your questions, and you will be much more likely to engage your students and deepen their learning.

However, Applebee, Langer, Nystrand & Gamoran (2003) investigated the prevalence of authentic questions and the use of uptake in ELA classes across middle and high schools in the USA. In the eighth-grade classes, they found that only 10% of teacher questions were authentic and that 11% exhibited uptake. In the ninth-grade classes, 27% of teacher questions were authentic and 26% exhibited uptake. Applebee et al (2003) collected data in grades 7, 8, 10, and 11 and showed that 19% of teacher questions were authentic and 31% exhibited uptake.

There is, however, a strong caveat to mention. Although authentic questions are generally better than inauthentic ones (because they signal to students that their ideas are important), the correlation with improved academic performance occurs *only when* the questions are related to the subject matter. If they wander off track and focus only on the students' lives or current affairs without any clear link to the curriculum topic being studied, then the improvements in achievement outcomes disappear. The questions are still appreciated by students, but their studies don't improve (at least, not the ones that are tested).

**5. Quieten the monopolisers.** There are always some individuals who dominate discussions given half the chance. Most groups have them. Certainly, every class does. Now and again, we quite like a monopoliser – it's better than having absolutely no one willing to speak. But most of the time, quietening the monopoliser and inviting responses from a broader range of students has to be preferable.

Three of the best ways to achieve this are to introduce 'thinking rounds.' Don't signal this ahead of time but once the usual suspects have offered their first ideas, announce the end of Round One. Those who spoke in Round One, should now take a listening and thinking role. It's fascinating what happens when you get to round three or four and the quietest students speak because they know there's no more competition waiting to silence them!

The other approaches I recommend are to 1) adapt Think-Pair-Share so that talk partners represent each other's ideas rather than their own; and 2) eavesdrop on pairs or small group discussions, identify ideas you think will extend other people's thinking, and then encourage one of the quieter students to communicate these ideas to the whole class.





2.1.4 Increasing the Sample Size

2.1.5 Checking in With Rosenshine

2.1.6 Questioning Summary

### 2.1.4 Increasing The Sample Size



Gathering responses from a few usual suspects is a poor way to judge competence of the many. There are, however, routines that can be established to improve sampling reliability.

One of the most significant categories of decision-making in the classroom is when to move on to the next part of the lesson. By far the most common way to judge this is to ask a question of the whole class and decide if the responder is accurate. If they are, move on. If not, then ask another student. If the second student gets it right, then move on. If not, then ask another. If three in a row get it wrong, then maybe it's time to repeat or clarify.

The problem is: it is almost always the most confident, most articulate or most advanced students who offer answers. Everyone else keeps their heads down. To judge the competence of the many on the answers of these few is a poor way to make decisions.

Imagine that I read a passage of text displayed on the board with a class of students. The text includes the words, *guerrilla*, *plaza* and *incomunicado*. I ask about the meanings of those words. The one student in the class who speaks Spanish at home answers correctly. The other 29 students who have little or no Spanish do not answer. Would this be a reliable test? I'm assuming you would say no. Yet it happens so often: teachers ask a question, the few students with an advantage over the others answer correctly and so the teacher moves on as if the minority represented the majority.

A popular alternative to this is cold calling. There are better options, but cold calling is frequently used. It is when a teacher calls on a student to answer without that student having volunteered. Sometimes, this approach is randomised; at other times the teacher makes strategic selections. The hackneyed version is having a set of lollipop sticks with the students' names written on and selecting one at random. Phone apps have now become the digital lollipops.

The problem is, neither of these approaches increase the sample size. Whether you are choosing students at random or being more calculated with your choices, you are still only gaining an insight into the thinking of a few. I call this 'tourist teaching'. Tourists often tell

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stories about the quirks of an entire nation based on a short visit to the capital city. ‘We took a trip to see the pyramids in Cairo. I think it’s so strange that *Egyptians* will ...’ or ‘We loved New York but I found it so exhausting. *Americans* are always in such a hurry.’

An approach that is better than cold calling is to make use of mini whiteboards. They can be a distraction, but the benefits far outweigh the problems. Asking a question and having your students write their first thoughts onto the whiteboards affords a far more accurate insight into general levels of understanding than can ever be achieved by asking for verbal responses from one or two students. Not that these short, written responses are enough by themselves – further questioning is needed to understand the thinking behind them. But, as a starting point, they are certainly better than the regular hands up approach from the few eager beavers.

I realise this is hardly the most novel idea in this book. Indeed, historians believe the Ancient Egyptians used *Gessoed* boards in a similar manner. If that’s right, then the idea is already thousands of years old! And yet, the vast majority of classrooms I walk into do not have mini whiteboards, at least not ones that are routinely used. Many have supplies somewhere but they are only used sporadically. I really don’t understand this. I know there are problems with students doodling on them, getting ink on their hands and pens running out or the nibs splaying but if the routines are right and the expectations are high, then these problems are mostly overcome. And when they are, the effects are invaluable.

Being able to capture an accurate sense of your students’ thinking is far too beneficial to pass up because of a few hassles.

### Attention or Illusion

Another issue with cold calling is that many students offer the illusion of engagement. They turn their head towards you. Distance themselves from disruption. Raise their hand when you ask a question, only to drop it if you look towards them, a theatrical groan added for emphasis. ‘I’m with you’ they say, but their inner thoughts say otherwise.

The opposite can also be true. Students who are careless – or couldn’t care less – about outward impression. Too busy pondering to worry about politeness. Blocking out the bustle to wonder and puzzle. ‘Why are you staring out the window?’ they’re asked. ‘I’m thinking, miss’, they reply. ‘Well, stop thinking and get on with your work!’ is the satirised reply.

Leaders on learning walks look for levels of engagement. They see students sitting in class, looking attentive, taking notes and nodding in agreement. Yet on deeper scrutiny, those students are found to have been daydreaming, scribbling their names or writing non-relevant notes. No wonder there is a growing disquiet about the robustness and reliability of classroom observations. Are we really able to observe learning or are we simply taking note of levels of compliance?

“Performance is what we can observe and measure during instruction or training. Learning – that is, the more or less permanent change in knowledge or understanding that is the target of instruction – is something we must try to infer, and current performance can be a highly unreliable index of whether learning has occurred.” (Bjork and Bjork, 2011)

‘What can I do about the students who won’t engage?’ is a question I’m asked frequently following a demonstration lesson. As sympathetically as I can, I encourage the questioner to

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describe how they know when someone is engaging. Invariably, they talk only of outward signs of attentiveness and never of depths of thinking.

So again, I would say mini whiteboards are a big step up from this. In fact, at the risk of sounding like I have shares in a mini whiteboard company, I would say these – plus a hovercam for projecting students' work onto the board – are amongst the most effective pieces of equipment in classrooms.

### 2.1.5 Checking In With Rosenshine

Professor Barack Rosenshine (2012) summarised at least 40 years of research on effective instruction. He took evidence from cognitive science, observations of excellent teaching, and research on cognitive supports. To be included in his analysis, every behaviour had to be correlated with higher student outcomes. From this, he created a set of principles for actions that can result in improved learning.

In view of the topics of this chapter, I invite you to pay particular attention to steps three and six, both of which are explained further below.

1. Begin a lesson with a short review of previous learning.
2. Present new material in small steps, with student practice after each step.
- 3. Ask many questions and check the responses of ALL students.**
4. Provide models for problem solving and worked examples.
5. Guide student practice.
- 6. Check for student understanding.**
7. Obtain a high success rate.
8. Provide scaffolds for difficult tasks.
9. Require and monitor independent practice.
10. Engage students in weekly and monthly review.

#### **Principle Three: Ask Many Questions and Check the Responses of All Students**

Rosenshine found that the most effective teachers ask lots of questions and use many different strategies to harvest answers from all students rather than from a few. They also ask students to explain the process they used to answer the question. Less successful teachers on the other hand, ask fewer questions and almost no process questions.

The ways in which teachers gather answers from many students rather than from a few include:

- Writing their first thoughts on a card or mini whiteboard and showing them to the teacher (and to others).
- Telling the answer to a neighbour and then pairs reporting back.
- Summarising the main idea in one or two sentences, writing this on a card and sharing it with someone else. This is often done as a paired activity.
- Raising their hands to indicate a level of understanding. For example, raise your hand if you are confident that you know a good solution; raise your hands if you have an idea but are not totally sure it's the right one; raise your hand if you have questions that need answering before you can answer my question.
- Raising their hands if they agree / disagree with someone else's response, or if they have a question or reason to add.

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The questions that Rosenshine discovered were most productive were these.

- How are [this] and [that] alike?
- What is the main idea of ...?
- What are the strengths and weaknesses of ...?
- In what way is [this] related to [that]?
- Compare [this] and [that] with regard to ...
- What do you think causes ...?
- How does [this] tie in with what we have learned before?
- Which one is the best: [this] or [that] and why?
- What are some possible solutions for the problem of ...?
- Do you agree or disagree with this statement: ...?
- What do you still not understand about ...?

### Principle Six: Check for Student Understanding.

Rosenshine showed that effective teachers check for student understanding by:

- Asking questions.
- Asking students to summarise the key learning points.
- Asking students whether they agreed or disagreed with other students' answers.
- Asking students to elaborate on the material.
- Find connections between the material being studied and other lessons or contexts.
- Asking students to think aloud when solve problems.

In contrast, the less effective teachers simply asked, 'Are there any questions?' and, if there were none, assumed students had learned the material and proceeded to pass out worksheets for students to complete on their own.

### 2.1.6 Teaching Your Students How To Ask (Better) Questions

Many moons ago, at the beginning of a school year, I told my students that I was going to challenge myself to ask more frequent – and better quality – questions during lessons. No longer would they be listening-doing-listening-doing; they were also going to be thinking, answering, wondering, and responding to questions. Lots of lovely questions.

To help me with this, I prepared a crib sheet. At university, I was trained in Philosophy for Children (Lipman, 1987), so I dug out a list of Socratic questions from my course notes. Partway through a lesson, I'd make a beeline for a group of students, whip out my prepared list and initiate a questioning sequence. 'Could you tell me what ....'; 'How do you know if ...'; 'When might that work more effectively?'

It wasn't long before my students asked if they could have a copy of my Socratic questions. Of course, I obliged. No sooner did they have a copy in their hands, then they were asking each other all sorts of inventive, thought-provoking questions. Most of the students at this school were at risk. Their home language was coarse to say the least. Here though, they were quizzing each other with open, high-quality questions; listening carefully; checking for assumptions; making suggestions; giving encouragement. This didn't happen overnight of course, but it was the direction they travelled and within a few months, their interactions were characterised entirely differently from the start of the year.

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The following year, I created a questioning wall entitled Thinking CAP? This stood for, 'Thinking Children Asking Philosophical Questions'. The following year, with the rock band Oasis at their peak, I renamed it 'Wonder Wall'. The display was split into two sections. On the left, we had lots of question stems. On the right, we placed some of our favourite examples that had been asked by students during their lessons.

Figure 1 shows the stems we used together with some of the examples I can remember through the fog of time.

Figure 1: Question Stems For Students To Use

Question Stems	Our Examples
What is ...	What is value?
What makes ...	What makes something worthwhile?
Would you ...	Would you rather have one million JP¥, US\$ or NOK? (and what would you do with it)
How do we know ...	How do we know if facts are correct?
... always (or never) ...	Is proof always a good thing?
What if ...	What if Hitler had won WWII?
Is it possible to ...	Is it possible to be right and wrong at the same time?
When ...	When is it ok to say no?
Who ...	Who decides what makes art, art?
Can we ...	Can we think without words?
Why do people say ...	Why do people say there is a pot of gold at the end of the rainbow?
What is the difference between ...	What is the difference between sport and games?
Should we ...	Should we obey all rules?
What would you do if ...	What would you do if couldn't use a calculator?
Are you saying that ...	Are you saying that zero is the same as nothing?

Depending on the students you work with, you might want to offer just two or three question stems and then add to them bit by bit. Sometimes too much choice is overwhelming (see Section 6.4 about cognitive load).

### 2.1.7 Questioning: Summary

Questioning is the process of directing questions towards learners. A meta-analysis of 14 studies found a positive relationship between the use of higher-level questioning during instruction and student gains on tests of both factual recall and application of thinking skills. (Redfield & Rousseau, 1981). Hattie has included this meta-analysis in his database and calculated an effect size of  $d = 0.73$ . There are seven other meta-analyses in the same category that bring the overall effect size to  $d = 0.49$ . This is a significant effect.

A range of topics have been investigated within these meta-analyses. These include:

- Types of questions teachers ask.
- The sources of teacher questions.
- The effect of teacher questions compared with other instructional methods.

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- The effects of different types of questions.
- The effects of waiting for students to respond after asking questions.
- Training teachers to use certain types of questions.
- Teaching students how to answer questions.
- Teaching students to generate their own questions.
- The psychology of question asking and answering.

This considerable volume of research has shed light on several issues. For example, it is known that:

- ✗ The incidence of higher order and authentic questions is scarce relative to lower order and known-answer questions.
- ✓ Waiting for students to respond to questions leads to enhanced quality of responses and improved student achievement.
- ⇒ Teachers can learn to ask certain types of questions, and students can be taught how to answer questions in a more open-minded, curious way.
- ✓ Promoting student generated questions has positive effects on learning.

Get it right and questioning is one of the best ways to engage your students. By asking questions that provoke higher order thinking, giving your students time to think, and taking an authentic interest in their answers, you will likely increase their active engagement and boost their learning outcomes.

### Three Starting Points for IR-Explore Questioning

Earlier I mentioned that an 'uh-huh' or a 'go on' might be more effective in the right circumstances than any type of question. Thus, the process of 'questioning' is as significant, perhaps even more so, than the actual 'questions' you ask. That said, questions are the building blocks of questioning and you've got to start somewhere. So, in addition to the examples I share in [Section 3.1.1](#), here are three ways to make a start with questioning.

#### 1. What do you notice?

If I was limited to one opening line for every questioning sequence, then this would be the one I'd choose: 'what do you notice?' It is so flexible and productive. It gives the air of being open-ended (tone of voice dependent) and can be applied in any subject area. It invites your students to draw distinctions, make suggestions, ask questions and suggest alternatives. You could, for example, show one or more calculations on the board and ask, what do you notice? You could just as easily share a text, image, diagram or pose. The answers it elicits will give you a good sense of where your students' understanding is, what their concepts are and, just as importantly, what misconceptions they might be harbouring.

#### 2. How do we know?

This question lends itself brilliantly to drawing out the thinking behind an answer. It is particularly useful when your students are confident in their answer and you're wondering what avenues there are for exploration. For example, having established that a calculation is correct, we can ask 'how can we know (for sure) that this is correct?' Or, when studying biodiversity and having established that an image on the board represents the Amazon rainforest, we can ask 'how do we know it is a tropical rainforest?' Students can then respond in terms of latitude, rainfall, atmosphere, soil fertility, and so on. Or when studying Wilfred Owen's *Dulce et Decorum Est*, asking 'how do we know the poet was involved in WWI?'

#### 3. What's the same and what's different?

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This is a similar type of question to ‘what do you notice?’ but it directs students to comparing and contrasting. So, getting your students to look at two calculations, images, problems, statements, models, approaches, designs, explanations and so on, and then asking them to spot what is similar and what is different is a very strong way to begin an IR-Explore sequence.

You will see in [Sections 2.4 and 2.5.3](#) that many of the dialogue strategies I recommend next are based on this central question.



### 2.2 Use Dialogue To Build Engagement

#### 2.2.1 Teaching Students How To Engage In Dialogue

#### 2.2.2 Building Exploratory Talk

#### 2.3 Choosing The Right Time To Engage Students In Dialogue

## 2.2 Use Dialogue To Build Engagement



Dialogue is one of the most effective ways to boost student learning. It develops language skills and knowledge far more effectively than any other form of classroom interaction.

Questioning is one of the most common ways to engage students. The problem is it typically relies on the direct involvement of the teacher. It doesn't have to, but it generally does.

Dialogue, on the other hand, is a way to engage students without a teacher needing to be involved all the time.

I mentioned earlier in the book that Professor John Hattie and I have worked together many times. During our last speaking tour before the covid pandemic broke, I recorded a series of interviews with him. These can be viewed at [LearningPit.org/John-Hattie](https://learningpit.org/John-Hattie). One of the clips begins with me asking Hattie, "Of all the factors influencing student learning that you've included in your database, which effect sizes surprised you the most?" He answered without hesitation: "The impact of classroom discussion."

He went on to say, "I knew feedback was powerful; I knew about peer effects and student-teacher relationships; I also knew that the jury was still out on the so-called technological revolution – the

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revolution that has been going on for decades. But the one factor that stood out more than most was classroom discussion. With an effect size of  $d = 0.82$ , this approach to teaching has the potential to double the rate of learning.” (Interview with Hattie, 2019)

Now, there is a caveat to this: thus far, Hattie has included only one meta-analysis on classroom discussion in his database, covering the outcomes of 42 studies. So, although the effect size  $d = 0.82$  is considerable, the reliability of this data is weaker than, say, the evidence he has included on feedback with seven meta-analyses covering 798 separate studies.

That said, other databases, including the one built by the EEF here in England (see [Section 1.5](#) for more about their work) have synthesised many more meta-analyses and concluded that classroom discussion (or ‘oracy’ as they call it) has a “very high impact for very low cost based on extensive evidence.” (educationendowmentfoundation.org.uk, accessed 12 May 2023). They quote six months additional gain in a school year when using dialogic activities in the classroom.

Snow (2014) shows that classroom dialogue creates opportunities for extended discourse and consequently, develops language skills far more effectively than non-dialogic interactions.

The meta-analysis that Hattie includes in his database by Murphy, Wilkinson, Soter & Hennessey (2009) shows:

- ✓ Substantial improvements in text comprehension.
- ✓ Moderate improvements in:
  - Inference
  - Comprehension
  - Critical Thinking
  - Reasoning

So, it is fair to say that dialogue has the potential to significantly boost student learning. Strong and extensive evidence confirms this. There are also strong links between high quality dialogue and the IR-Explore approach to questioning that I mentioned earlier.

Here’s the bad news though: dialogue is not yet strongly rooted in daily classroom practice.

### Barriers to Dialogue

Dialogic approaches to teaching and learning still encounter many barriers in the school setting. Most notably, teachers using a monologic approach (polite way of saying that teachers use a ‘lecture’ style of teaching) too often. Other barriers include a tension between giving students freedom to interact with each other and delivering curriculum goals (Lyle, 2008; Howe and Abedin, 2013); traditional classroom rules favouring teacher talk (Mercer and Howe, 2012); and seating plans directing students’ attention towards the teacher rather than favouring an interaction between everyone else in the room (see [Section 2.1.3](#) for notes about arranging the room to encourage eye contact).

Graham Nuthall, whose research I draw upon for almost every chapter in this book, gave the *Jean Herbison Lecture* in 2001 (“The cultural myths and the realities of teaching and learning”). Referring to his findings from the longest ever series of studies on teaching and learning, he said this:

“What was immediately apparent was that teachers do not talk to students about learning or thinking. They talk about paying attention and not annoying others. They talk about the



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resources the students will need to use, about how long the activity should take and what will happen if it is not finished on time.

When you listen to students they talk about the same things. They are constantly comparing how much have they done. How long will it take, do the headings have to be underlined, where did you find that answer, do you have to write it all out, does it have to be finished for homework?" (Nuthall, 2001)

Professor Gad Yair's research makes for equally sobering reading. Yair (2000) asked 865 students in grades 6, 8, 10 and 12 to wear digital wristwatches that emitted signals eight times a day. They were asked to note 'Where were you at the time of the beep?' and 'What was on your mind?'. Of the 28,193 responses, a little under 12,000 took place in school and just over 4000 during learning experiences. Analysis showed that:

- Students were engaged with their lessons only 54% of the time. There was very little variation relative to student ability or curriculum subject.
- Students in 6<sup>th</sup>-grade engaged 62% of the time; by the 12<sup>th</sup> grade, this engagement dropped to 49% of the time.
- External preoccupations encroached on the students' attention 36% of the time. For at-risk students, this preoccupation increased to 42% of the time.
- Teachers talked between 70 and 80 per cent of class time. Student engagement was at its lowest during these times.
- Teachers spoke even more to older classes and smaller classes (one of the reasons why reducing the number of students in a class doesn't necessarily boost learning outcomes).

The few bits of good news were that students' engagement improved significantly when working in laboratory-classrooms (73% engagement) or were taking part in group activities (also 73% engagement), group presentations (67%) and discussions (63%). Perhaps most importantly of all, the biggest upswings were experienced by at-risk students (see [Chapter 6](#) for more about this).

So, the biggest barrier to engaging students in dialogue is ... us teachers talking too much! If only we could shut up for a bit, maybe our students would engage more.

Of course, that is not to say we should all become mime artists like the famous Marcel Marceau! Nor should we replace our talk with students completing worksheets in silence. The best way forward is to teach our students how to engage in high quality dialogue with each other and with us. And the good news is, there is a lot of research to show not only is it possible but it's also very beneficial. The main research I will draw on is by Professor Robin Alexander, and the Cambridge Oracy team led by professors Mercer and Wegerif. For now though, here are some useful insights from two other meta-analyses.

Engaging students in dialogue about texts (literature or subject-based) leads to significant gains in reading comprehension when teachers:

- ⇒ Reformulate and summarise what their students say.
- ⇒ Provide an opportunity for other students to build on these ideas.
- ⇒ Encourage students to put the main idea into their own words.
- ⇒ Press students to elaborate (for example, 'How did you know that?' 'Why?')

(Wolf, Crosson & Resnick, 2005)

When students engage in group work during science lessons, then the best learning gains are noted when:

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- ⇒ Groups are asked to seek agreement.
- ⇒ Students are prompted to express contrasting explanations and opinions.
- ⇒ Teachers take a listening role during group activities.

(Howe & Abedin, 2013)

### 2.2.1 Teaching Students How to Engage in Dialogue



**“The object of teaching a child is to enable him to get along without a teacher.”**  
(Elbert Green Hubbard, 1922)

Most peer-to-peer talk is unproductive. Many observational studies have confirmed this (for example, Galton, Hargreaves, Comber, Wall, & Pell 1999; Blatchford & Kutnick 2003). Lack of opportunity to engage dialogue is one barrier, as shown in the previous section. The other obstacle is that students don't typically know how to talk and think together effectively, even though their teachers often assume they do (Wegerif & Scrimshaw 1997).

The first step to improving dialogue is properly defining it.

Dialogue is a specific type of talk, distinct from others more commonly heard in classrooms. It involves teachers and students commenting and cumulatively building on each other's ideas, posing questions and constructing interpretations together.

Key characteristics include:

- Students articulating ideas seen from someone else's perspective.
- Sequences of primarily open questions.
- Knowledge being co-constructed (for example, 'picking up on what students A and B said, and adding my thoughts, I'm wondering if that means ...')
- Reasons being offered in support of ideas and opinions.
- Students expecting their ideas to be critiqued and improved by others.

“In dialogic teaching the teacher... asks questions which encourage students to take extended turns to express their thoughts, reveal their misunderstandings and make relevant comments uses talk to create continuity and coherence in children's learning helps students understand that talk is useful for learning balances authoritative talk with dialogue.”  
(Alexander, 2007)

Unfortunately, the term 'dialogue' is often used interchangeably with 'discussion', even though many researchers make important distinctions between the two. Dialogue should have a sense of direction. It should seek a clearer understanding of the truth or move towards a more sophisticated, nuanced solution to a problem. Discussion, on the other hand, doesn't have to stick to the point. It can go in any direction and be entirely responsive to participants' interests and stories.

Dialogue will be as if participants are sailing into the wind; they will take tangents but will always maintain a focus on their intended direction, tacking back and forth across a central line. In contrast, discussion will be about the experience itself, never worrying about a sense of direction or reaching an intended destination.

Rather than keep emphasising the differences between dialogue and discussion, I tend to use the term, 'exploratory talk' instead. Staff relate to this well, and often, students do too.

### **Focussing On the Right Type of Talk**

The terms 'cumulative talk', 'disputational talk' and 'exploratory talk' were coined by Neil Mercer, an Emeritus Professor of Education and Director of the Cambridge Oracy project. The way in which he distinguishes between these three types of talk reminds me of Goldilocks' Porridge. Cumulative talk is just a little too warm; disputational talk is a little too cold; and exploratory talk is just right.

**Cumulative talk** is characterised by repetitions, confirmations and elaborations. It is typically heard when friendship groups work together or when an unfamiliar group is getting to know each other. The talk is positive and affirming, making everyone feel included and welcome. The participants rarely criticise each other, and they don't critique others' ideas. Not everyone in the group takes part, nor are they expected to. The group accepts first ideas and does not try to go beyond these. This leads to an accumulation of 'common knowledge' and a sense of harmony in the group.

**Disputational talk** is characterised by short interactions and individual decision-making. Students make little attempt to listen to each other or to pool resources. The talk is dominated by assertions and counter-assertions. This type of talk is less prevalent than you might think and is actually quite hard to spot because it can occur under the radar. It is much more negative than cumulative talk. Disputational talk is critical of individuals (and their ideas), focuses on differences, is competitive and is all about being seen to win. Individuals within the group dominate. Mistakes are criticised and perhaps even ridiculed. Disputational talk is similar in outcome to the IR-Evaluate approach to questioning I described in [Sections 2.1](#).

**Exploratory talk** is characterised by longer exchanges and use of questions, reflection, explanation and speculation. It makes use of critical thinking and can also be very creative. As Mercer explains, exploratory talk is "that in which partners engage critically but constructively with each other's ideas. Relevant information is offered for joint consideration. Proposals may be challenged and counter-challenged, but if so, reasons are given, and alternatives are offered. Agreement is sought as a basis for joint progress. Knowledge is made publicly accountable, and reasoning is visible in the talk." (Mercer, 2000, p. 98). Exploratory talk has much in common with the IR-Explore approach to questioning I described in [Section 2.1.1](#).

Mercer and his team at Cambridge University have run many studies into the impact of exploratory talk. In one such intervention, they showed teachers how to explain and model exploratory talk with 700 pupils, aged 6-14. In the first five lessons, teachers modelled the approach as part of teacher-led activities. In the second five lessons, pupils engaged in group activities that gave them the opportunity to lead their own exploratory talk.

The gains made by the students were impressive. Compared with control classes, students ...

- Began to use much more exploratory talk.
- Pursued group activities more cooperatively and in more depth.
- Became better at solving problems together.
- Became better at solving problems independently (as assessed by scores on Raven's Progressive Matrices).
- Achieved significantly better scores in tests of science and maths.

Also ...

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- The number of questions students asked each other increased from 17 to 86.
- The number of reasons given more than doubled.
- The number of speculations ('what if ...') rose from two to thirty-five.
- The number of words used by the groups almost doubled.

(Mercer & Littleton, 2007)

The researchers identified two main reasons for these beneficial outcomes. Firstly, the participants appropriated successful problem-solving strategies and explanatory accounts from each other; and secondly, students learnt how to co-construct new, robust and generalisable explanations. **This suggests a strong connection between social interaction (thinking together) and improved cognitive development.**

This theory is nothing new of course. Lev Vygotsky (1896-1934) wrote at length about 'social cultural theory'. He suggested that higher mental functions are learned through social interaction before becoming a feature of the internal thinking of an individual. He described language as both a cultural tool (for developing and sharing knowledge amongst members of a community) and a psychological tool (for structuring the processes and content of individual thought). He also proposed that there is a close relationship between these two functions of language, which can be summed up in the claim that inter-mental (social, interactional) activity stimulates some of the most important intra-mental (individual, cognitive) capabilities. (Vygotsky & Cole, 1978)

### 2.2.2 Building Exploratory Talk



**Exploratory talk is the most effective form of dialogue. It is characterised by longer exchanges and use of questions, reflection, explanation and speculation.**

The three steps to making exploratory talk the style of interaction for your students are as follows:

**1. Explain what is expected.** I realise this sounds obvious, but it really is the best starting point. Indeed, it is so effective that on countless occasions when I have led demonstration lessons and included a short introduction about exploratory talk, observing staff notice a change in their students' behaviour immediately. When working in primary schools, I use the term 'exploration' and say the actions I expect of everyone are:

- Allow each other to speak.
- Ask questions so you understand each other better.
- Listen to learn.
- Don't agree straight away – your job is *not* to make things easier for each other. Your job is to help each other think more! So, ask for more information; suggest alternatives; use the phrases, 'ah yes but what about ...' or 'could it be ...'
- Dig for detail and search for other suggestions.

If working in high schools, I generally explain exploratory talk in comparison with the other two styles of talk (disputational and cumulative). On one occasion, a student who was monopolising the discussion in his group called himself out, apologised to his peers for being disputational and promised to be more exploratory (which he was for the rest of the lesson).

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**2. Draw attention to incidences of exploratory talk.** Watch out for your students engaging in exploratory talk and when it isn't distracting to do so, draw positive attention towards it. Behaviours include students exploring ideas and offering reasons for their thinking; responding positively to being challenged by others; being willing to change their minds but also assertive enough to stand by the courage of their convictions; encouraging others to speak then building on what they say by reflecting back the words and ideas used; expressing uncertainty or tentativeness; and exploring differences of opinion without there being a sense of point scoring or making things personal.

**3. Agree a set of ground rules.** Notice that I didn't start my list with this one. Too often, so much is made of ground rules at the beginning of a lesson that they come across as commandments rather than encouragements. I would recommend, therefore, having an implicit set of high expectations to begin with and then making them more explicit later if you feel the need to do so later.

The items below are suggestions for ground rules. Every teacher has their own approach, so I wouldn't want you to think these are the only way to go. Having said that, I would strongly advise against using the phrase, 'there is no right or wrong answer.' Better to phrase it as 'we are open to possibilities' or 'we will always seek out the best answers' but to say there is no right or wrong is, well ... wrong! Right answers (or better answers) do exist most of the time, and wrong answers always exist! There is a cartoon that often does the rounds of two people viewing a digit from opposite ends. One says it is '6' and the other says it is a '9'. The caption often says that reality is a matter of perspective. That might well be the case, but it is also true to say that lots and lots of wrong answers still exist even if the right answer is unclear. For example, if someone said the digit represented 143 then that is wrong. We still want to encourage the continual pursuit of 'better' answers, but this does not mean to say that we have to accept any answer.

### Possible Ground Rules

- Listen with care, empathy and an open mind.
- Encourage others to contribute.
- Ask questions to better understand each other's points of view.
- Respect the person, critique the ideas.
- Support your thinking with reasons and examples.
- Refer to other people's ideas when giving your thoughts.
- Take intellectual risks.
- Express tentativeness.

## 2.3 Choosing The Right Time To Engage Students In Dialogue



**Dialogue strategies work best when you are wanting to move your students from surface knowledge to deep learning. Before that, direct instruction, teacher questioning and topic research work better.**

Dialogue is one of the best ways to engage students and deepen their learning. However, it isn't always the best approach to choose. When your students have no knowledge about a topic, then direct instruction and student exploration are more appropriate.

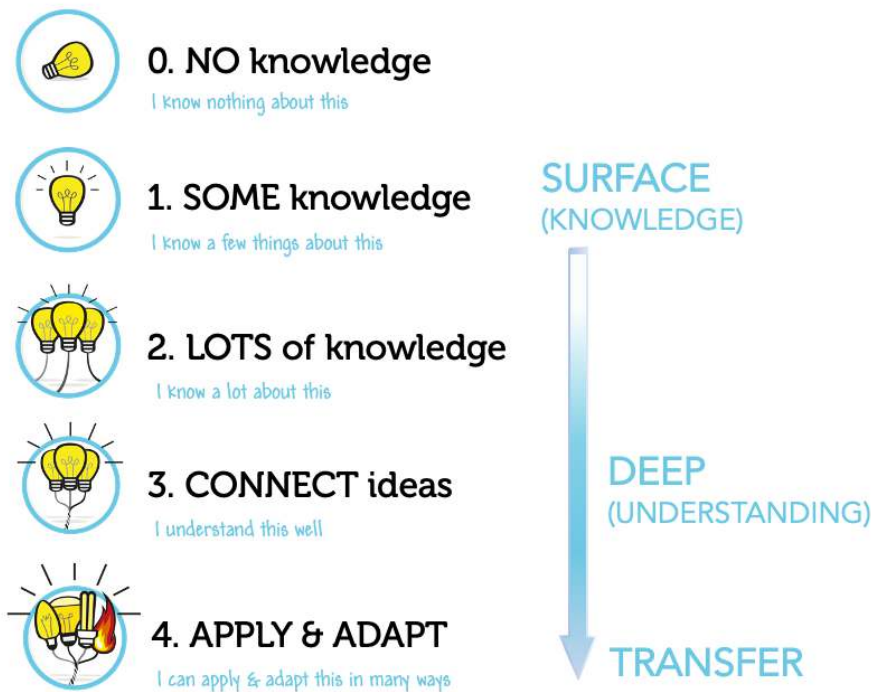
A clear way to think about this is with the help of the SOLO Taxonomy (Biggs & Collis, 1982). I have made several references to this model in the chapter about feedback and in the final chapter about

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equity. In many ways, it is more central to feedback than it is to dialogue but because this chapter comes first, I will describe it here.

Figure 2 shows an abridged version of the SOLO Taxonomy. Instead of using the original terminology of *prestructural*, *unistructural*, *multistructural*, I have used the terms, no knowledge, some knowledge and lots of knowledge. I have also added the lightbulb images, the characteristics of which I will draw attention to in my descriptions afterwards. Going for this everyday language should help with its application. It also makes the model more accessible if you want to share it with your students (which I recommend that you do).

Figure 2: The SOLO Taxonomy (Abridged)



This diagram tracks a learner’s progress from knowing nothing (about a particular subject) to knowing something about it, to knowing lots about it, to being able to connect their new knowledge with other ideas within and outside the same domain, to applying and adapting their understanding in different contexts.

As the learner moves from one stage to the next, they make progress from surface knowledge to deep learning to an ability to adapt and transfer that learning into different contexts.

It is important to note that surface and deep learning can be accomplished simultaneously, but *ordinarily* students move from one to the next to the next as shown in the diagram.

Surface learning includes acquiring new knowledge without paying much attention to the purpose or strategy used; memorising facts and sequences; repeating routines; and learning ideas or facts without considering their interconnection. Deep learning relates to connecting concepts; making meaning; looking for and analysing patterns and principles; thinking critically and creatively; developing theories; identifying similarities and differences; defining and analysing. Transfer includes selecting, applying and evaluating strategies; choosing resources;

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adapting approaches and ideas to better fit the context; elaborating; creating and synthesising; and striving towards coherence.

When looking to move students from knowledge to understanding, the first step is to help them make connections. If you look at the different lightbulbs I created, you will notice the difference between the three lightbulbs at the 'lots of knowledge' stage compared with those at the 'connect ideas' stage. In the first, the power cords are separate; in the second, they are intertwined. This is meant to represent the basic premise for understanding ... connecting ideas together to make sense of them. When someone spots a rule or pattern, when they discern the similarities and differences, when they can explain the function of one thing *relative to others*, then that is when someone understands. If this is done collaboratively through dialogue and social construction, then understanding can be deepened further still.

Thus, learning should be thought of in terms of moving from knowledge to understanding to application and redesign. So when, in [Chapter 4](#), I say 'feedback should be advice that is well used to improve learning', this is what I mean: it should help students move from their current stage of learning to their next stage (see [Section 4.3.3.1](#)).

Dialogue is one of the best ways to help your students move from stage 2 (lots of knowledge) to stage 3 (connecting ideas) and then onto stage 4 (applying and adapting ideas into different contexts). Bear this in mind as you read through the dialogue strategies that I've shared in the next [four](#) sections of this chapter.



2.8 Not All Those Who Wonder Are Lost

2.9 Dialogue Summary

2.10 TEACH Brilliantly Top Ten:  
ENGAGEMENT

### 2.8 Not All Those Who Wonder Are Lost

The first novel I chose to read as a child was *The Lord of the Rings*. In part one of the trilogy, there is a poem by Bilbo Baggins that begins, "All that is gold does not glitter; Not all those who wander are lost." (Tolkien, 1954). I have named this section by adapting the second line to 'wonder'. I did so because I'd like to draw your mind back to [Section 2.1.4](#). In it, I wrote about the difference between authentic engagement and students giving the illusion of engagement.



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Many students know how to 'play school'. They're quiet in class. They nod occasionally. Put their hand up in the air during questioning sequences but drop it again whenever there's the danger of being asked to contribute. Pretend to work diligently on a digital device. Complete their assignments on time without committing their learning to memory; it was just a hoop to jump through. For them, the original aphorism used, amongst others, by Shakespeare, 'all that glitters is not gold' is fitting.

The opposite is also common in many classrooms though. Students who never offer an answer; avoid eye contact; appear inattentive but who are genuinely concentrating. Thinking about the ramifications of what is being said and how it connects to their earlier thoughts. For them, the slight adaptation of Bilbo's poem is more appropriate: 'all that is gold does not glitter; not all who wonder are lost.'

Thus, if we genuinely want to engage our students (rather than simply seek compliance) then we must look beyond the façade. We can't judge engagement by outward appearances; it is too desultory. We know human interaction is essential for learning – particularly in the pandemic age (Toth, 2021) – but that can come in many forms. Extroverted expressions are but one clue exhibited by some.

A fascinating way to frame this is to think about extraverted and introverted thinking. These terms come from the work of Katharine Cook Briggs and her daughter, Isabel Briggs Myers. During World War II, they created the Myers-Briggs Type Indicator (MBTI) to help women identify the sort of wartime jobs in which they would be most comfortable and effective. Their work was based on the theories of Carl Jung.

Of the four pairs of preferences proposed in the MBTI assessment tool, one set of opposites focussed on the difference between extraversion and introversion. It identified that some people tend to act–reflect–act (extraversion), whereas others reflect–act–reflect (introversion). Or put another way:

**Introverted** thinking is when someone **thinks to talk**.

**Extraverted** thinking is when someone **talks to think**.

The MBTI is a personality test and should therefore be taken with a very big pinch of salt. It is also context-related: how many of us are introverted when dragged to a party of complete strangers but extroverted when playing host at our own party? Context obviously matters! So, it is simply not true to say that we are either one way or the other all the time.

That said, there is some truth to this theory. There are some students in every class who lean towards extraverted thinking. They need to think aloud if they are going to think effectively. Whereas some students in the same class lean towards introverted thinking. They need lots of time (perhaps more than the lesson will allow) to think deeply before they arrive at an answer that they think is worth sharing.

Incidentally, introverted thinkers are not shy. Some might *also be* shy, but introverted thinking is not about timidity; it is about precision of thought. Introverted thinkers see little value in sharing their thoughts until they are certain that they know what they think! In their mind, opinions should be measured and exact. Because of this, they need time to think things through before stating their position. Adults who are introverted thinkers will often use the phrase, 'let me come back to you on that one' or 'I need to think about it first.' However, many young people don't feel in a position to make such requests.



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The reason I am writing about this is these divergent systems give very different impressions of engagement. The extraverted thinkers are too busy talking to demonstrate engagement with others; the introverted thinkers too quiet to prove they're ever engaging at all.

So in many classrooms, out comes the 'talking stick'. 'When it's passed to you, it's your turn to talk' advises the teacher, inadvertently sending everyone into a tailspin. The extraverted worry they won't be able to contain themselves long enough to wait their turn to talk. The introverted look fearfully at the stick, wondering what on earth they can say to pass it along as painlessly and quickly as possible. The pressure builds. Eventually, the extraverted jump the queue and blurt out their thoughts. 'Shhhhhhh' admonishes their teacher. The introverted, meanwhile, have long since stopped thinking about the content and are instead rehearsing a stock-in-trade phrase that will get everyone off their back. Crazy, isn't it? A convention that is designed to encourage everyone to participate actually stops many students from thinking!

A better approach is to be upfront and honest with your students. Tell them you know some of them do their best thinking out loud whereas others prefer lots of thinking time before saying anything. I typically say something along the lines of ... 'It's nigh on impossible to keep everyone happy all the time, but we'll do what we can do. There will be opportunities to share your ideas with the person sat next to you, and there'll be time for all of us to think. If you'd like to say something, then pop your thumb up. Don't raise your hands – that's far too distracting. Raise your thumb (keeping your hand on your knee or on the desk in front of you) and either the previous speaker or I will invite you to share your thoughts with the whole class when the time is right.'

After that introduction, you could use one or more of the following approaches. These are in addition to the guidance I have given in [Sections 2.1 to 2.3](#).

**Reflection time:** Give plenty of reflection time. Don't be frightened of silence! Budd Rowe's research (see [Section 2.1.3](#)) recommends a minimum of three seconds wait time.

**Midway Pause:** Pause a dialogue halfway through to give some additional thinking time. If you are a class teacher (rather than subject teacher), you might even pause overnight or for an extended period during the same day before returning to the topic.

**Inner circle and outer circle:** These work particularly well if you have a group of twenty or more. Split the group in two and get half the students to sit in a circle, with the other half sat around the outside of the circle. The outer group can record the dialogue – with a mind map, concept map or similar – as well as jot down their own thoughts. If you swap the groups around periodically, perhaps every five to ten minutes or so, then everyone will have a chance to reflect quietly and speak if they want to.

Of course, many teachers might still worry if some students don't speak. However, we don't know that students are concentrating even if they do speak! Many students have learned phrases and tactics designed to give the impression that they are focused when actually their mind is elsewhere. So whether you are in dialogue with one student or a whole group of students, I recommend the following:

- a. Pause and reflect time.
- b. Provisional language: Phrases such as 'perhaps', 'maybe' or 'I was wondering' can be particularly helpful for introverted thinkers. This is because, as I mentioned earlier, introverted thinkers will rarely speak until they are absolutely certain of their own beliefs. This

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convention, therefore, gives them the opportunity to try out their ideas without committing to them.

- c. Thinking: Remind your students that the most important thing is to think about the question. So long as everyone does that, it is up to individuals whether or not to share their views with others.

Once your students begin to share their first thoughts, guide the others to respond encouragingly and to build on what has been said. This can be done in one or more of the following ways:

**Repeat-Paraphrase-Connect (RPC):** When a student has expressed their first idea, get others to repeat word for word what they've said, paraphrase by saying the same thing in a different way or connect what was said to an idea of their own.

**Meaning:** A particularly effective strategy is to respond to a student's contribution by asking if anybody else knows what the student meant. Some of your students will feel certain that they understood, so ask them to explain. If only two of you are in the discussion, then you could try explaining what you think the other person meant. Either way, make sure you then ask the first person if indeed that was what they meant. Usually, the explanation is close to the intended meaning but not exactly so, which gives the first person an opportunity to clarify their thoughts even more. This strategy also teaches us there is often a marked difference between what someone says and how others understand it.

**Agree:** A simple (and effective) convention is to ask everyone taking part in a dialogue to begin their first few responses with 'I agree with . . . because . . .' as this requires participants to listen carefully to what others say.

## 2.9 Dialogue Summary



**Dialogue is one of the very best ways to engage your students. It helps you find out what they think, to listen to their emerging ideas, and to encourage them to talk through their understanding and misconceptions.**

At its best, dialogue weaves together a rich array of perspectives and questions that nurture critical thinking and intellectual growth. This dynamic classroom strategy has been shown to encourage deeper thinking and promote a positive impact on academic outcomes. John Hattie identifies it as the most surprisingly effective approach to boosting student learning.

An independent evaluation of a dialogue intervention led by Professor Robin Alexander and his colleagues at the University of Cambridge involving 5000 nine and ten-year-olds in England and 208 teachers calculated that after 20 weeks, students in the intervention group were two months ahead of their control group peers in English, maths and science tests. Coded video data also showed that the changes in both teacher and student talk were significant. (Alexander, 2018)

Effective dialogue is recognisable when ...

- ✓ The focus is on common interests, not divisive ones (dialogue is not debate!)
- ✓ Decision-making processes are kept separate from the dialogue (this is not about making decisions but about understanding each other more)

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- ✓ Assumptions that can lead to distortions of certain points of view are clarified and brought into the open
- ✓ Students are encouraged to reveal their own insights and assumptions before speculating on those of others
- ✓ Concrete examples are used to raise general issues

Dialogue contrasts with 'monologic' talk which tends to be dominated by the teacher and follows the Initiate-Respond-Evaluate (IRE) sequence. This pattern is typified by the teacher asking a closed question (initiate), a student answering (respond) and the teacher confirming or refuting that answer (evaluate). Such an approach is common in classrooms (Howe & Abedin, 2013) but has been criticised for limiting the meaningful engagement of students (Mercer, 1995).

Dialogue – or dialogic talk – takes a more conversational approach, trying to consider several points of view (Howe & Abedin, 2013). It encompasses encouraging, non-evaluative feedback (Chin, 2006) and refocuses the conversation away from the teacher's initiating moves towards students' responses (Wolfe & Alexander, 2008).

It is useful to think of dialogue as 'exploratory talk'. This term, coined by Neil Mercer (2000), is characterised by longer exchanges and use of questions, reflection, explanation and speculation.

The benefits of exploratory talk include:

- Encouraging active student participation (because students develop a sense of ownership in their learning journey).
- Developing critical thinking and problem-solving skills (because students are challenged to analyse, evaluate and synthesize information).
- Building of stronger communication skills (because students learn to articulate their thoughts and ideas effectively).
- Creating a positive attitude towards learning (because students experience the joy of discovery and intellectual curiosity).
- Building a sense of community and collaboration in the classroom (because students learn from to support each other more effectively).

Despite all of these benefits, dialogue is still not used very often in classrooms. So, I'd like to give the last word of this summary to one of the twentieth century's greatest advocates of dialogue, Paolo Friere. He proposed a dialogical approach in which students become 'active agents' in their own education. He asserted the idea that when education is used as a form of self-development, rather than a memory test, students realise that knowledge is power.

"If the structure does not permit dialogue the structure must be changed". (Friere, 1970)

## 2.10 TEACH Brilliantly Top Ten: ENGAGE

Engaged students learn more. Unfortunately, the forces of distraction are strong and overflowing. So, do what you can, when you to make learning authentic, questioning open and inviting, and dialogue exploratory and inclusive.

1. **The more students engage in learning, the more they fulfil their potential** (Csikszentmihalyi, 1990).
2. **Students engage when activities allow freedom of exploration**, and demand effort, concentration and skill.
3. **In a typical classroom, students engage for approximately 50% of a lesson** (Yair, 2000).
4. Clever use of questioning and dialogue can improve this rate dramatically. However, the most **common pattern of *Initiate, Respond, Evaluate* is relatively ineffective**.
5. **It is better to explore students' answers by asking for further details** including supporting reasons, examples and counterexamples.
6. Engagement can be confused with compliance. Better to **emphasise the need for listening and thinking** rather than eyes to the front and everyone taking a turn to speak.
7. **Introverted thinkers engage during periods of quiet reflection. Extroverted thinkers need lots of time to think out loud** (without being shushed for doing so). Good luck providing for these opposite ends of the spectrum – and everyone in between!
8. As an absolute minimum, **wait time should be increased to at least three seconds after a student has answered before you invite others to respond**. This won't be enough for introverted thinkers, but Budd Rowe's (1986) research shows this is the threshold beyond which outcomes dramatically improve.
9. **When giving your students the opportunity to collaborate in groups, teach them how to engage in exploratory talk**. This includes building on others' ideas; offering reasons to support opinions; and students being open to their ideas being critique and reformulated.
10. **Questioning sequences and dialogue do not have to arrive at an answer or resolution for them to be of value**. The most significant learning comes from the process of thinking together and exploring ideas deeply.