Direct Instruction

There is an important distinction to be made between the definition of the 'thinking skill' and what's actually involved in being able to do that type of thinking skilfully.

The conceptualisation of a thinking skill is no more than a verb to describe a type of thinking, until the identification of the type of thinking is allied to what constitutes skill in using that sort of thinking. This is what tends to happen where consideration stops at identifying opportunities within schemes of work where TS&PCs might take place.

Teachers should consistently identify opportunities within schemes of work where TS&PCs might take place.

For example, in analysis, you might provide pupils with an opportunity to carry out analysis, stop there and claim: 'this activity features the thinking skill of analysis.' However, without showing them what constitutes skilful analysis, how might they proceed to respond to that instruction? Unless you develop the opportunity to explicitly focus on what is involved in acquiring and developing skill in doing it, there is no guarantee that that there will then be any gain in pupils' skill in applying that type of thinking. In turn, that needs to be allied to considerations of quality: what will count as skilful analysis? What would the skilful application of analysis look like in this context?

The real advantage of approaching TS&PCs in this way is that by going on to decide what skilful thinking looks like in context, you can design a sequence of instructions to lead pupils towards using the thinking skill with developing facility. In other words, considering what will count as success has the effect of mapping out the stages that a pupil will need to work through in order to think skilfully of the subject content you want them to grasp.

To help pupils acquire a specific skill in thinking, the teacher needs to give them direct instruction. For example, the teacher introduces a particular skill such as making predictions, and draws attention to the idea by inviting the class to bring to mind examples of where they have seen people make skilful predictions in real life. You could give easily recognisable instances such as a weather forecast, or perhaps someone anticipating the outcome of a sporting event. You can then go on to examine the difference between a prediction and a guess.

The teacher can develop a set of prompt questions and use these to model making a prediction by thinking out loud to guide pupils through the steps:
- What might happen next?
- What evidence or clues are there for believing that this will actually happen?
- Which are the best clues or pieces of evidence that will give reliable information to use?
- How likely is it that the prediction is accurate?

The questions in this example are general; in the classroom, there will be a specific curricular context to develop the skill in question. So, for example, making more skilful predictions could involve observing an experiment in science and then speculating about what will happen next? The lesson then revolves around:
- examining the basis for reaching certain conclusions about why you think one particular outcome is likelier than another to happen; and
- exploring which speculations are justifiable and which are unfeasible, and why.

This will lead the class to draw conclusions about what those speculations reveal of the underlying mechanics of thinking that the experiment is designed to investigate.

In this scientific context, only some potential outcomes are possible; others must be excluded. If pupils know enough science to tell what's possible from what's impossible, then that will guide their predictions and reveal where they understand and where they misunderstand. So inviting predictions about what will happen next in this kind of context can give you clues about what pupils are thinking, and therefore, how they arrive at their prediction. It is a useful piece of information about their emergent understanding of the science under investigation.

This is the kind of format that is followed in the investigation of plant respiration, a common feature of KS3 Science. Without giving consideration to what it means to make skilful predictions in science, such a lesson would have pupils merely recapping on a procedure. That would lose most of the value of the investigation. Pupils should not just learn about plant respiration, but they should also develop insight into what is meant by:

- scientific method;
- formulating hypotheses;
- designing a fair test; and
- making accurate observations when collecting experimental data and interpreting results.

By including a consideration of making skilful predictions, you will deepen the pupils' learning about plant respiration. It will also provide the teacher and the pupils with an opportunity to pinpoint any misunderstanding, where they have made predictions incompatible with the underlying processes.

Although all this example involves is simply asking some questions at the start, it is vital to the exercise to ask those questions. Without them, a wealth of information is lost. Setting the activity up in this way means that you need to carry out a good deal of groundwork beforehand. If you plan these questions in this way, and if pupils are ready to respond to such questions with ideas that follow from their developing understanding of science, then they will learn much more effectively.