

COLD-CALLING VS THINK, PAIR, SHARE VS MINI WHITEBOARDS

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Cold-Calling, Think, Pair, Share and mini whiteboards have all featured heavily in classrooms in recent years, as educators look to maximise Retrieval Practice, engagement and oracy.

As well as being used in isolation, all three can be combined in certain situations. But what does the research say about the efficacy of these techniques? And when would you choose to use one over the other?

This article is co-written by InnerDrive psychologist Bradley Busch, who will describe each strategy and the research behind it, and Berwickshire Rector Bruce Robertson, who will give us a look at their classroom application...

1. COLD-CALLING

What is Cold-Calling?

Cold-Calling happens when the teacher decides who should answer the question they asked. It is important to note that it is not a behaviour management technique (i.e., used to embarrass students who haven't been paying attention). Likewise, it is not anti-hands up – it simply means the teacher isn't limited to a self-selecting pool.

What are the benefits of Cold-Calling?

In [this seminal study](#), researchers compared classes with high levels of Cold-Calling and classes with low-level of Cold-Calling. Over the course of the year, they found that students in the high Cold-Calling condition were more likely to volunteer an answer and felt more comfortable participating.



[Another study](#) found similar results, specifically when looking at shy girls.

Likewise, [this study](#) (albeit with a small sample size) found that while Cold-Calling has the potential to make student feel a bit anxious, this can be decreased by:

- Creating a positive culture around errors
- Allowing other students to assist
- Using the students' name
- Calling on student groups
- Providing thinking time before Cold-Calling

When to use Cold-Calling, and how to use it well

Questioning in lessons is most effective when it prompts all students to think.

Thinking is the key to learning. If two students are watching and listening to the same thing but only one of them is actually thinking about it, this student's long-term memory is much more likely to develop in a way the other's will not – meaning, they're more likely to learn.

The skill of a great teacher is to make all students think whenever a question is asked. Cold-Calling can help with that. However, like most teaching practices, its effectiveness depends on how it's done.

For example, asking "Joe, what is the capital of Australia?" is Cold-Calling. But because you said Joe's name before asking the question, Melissa, Cody, Todd and all other students will be less likely to think about the question and may switch off instead.

If you instead ask "What is the capital of Australia?", pause, then name Joe as the student you want to answer the question, Melissa, Cody, Todd and all other students are much more likely to have thought about the question. Not knowing who will be picked keeps students switched on.

The two key takeaways (that will require deliberate practice to do well):

1. Pause after asking a question to allow thinking time.
2. Name the student after asking the question to encourage all students to think about it.

Keep in mind that Cold-Calling may cause anxiety in some students, most commonly because of a fear of speaking out in front of their peers or of getting the answer wrong. However, the best way to address this is to give students more experience with Cold-Calling, while making sure they are not vilified or mocked for getting something wrong. Students feeling anxious shouldn't be an obstacle to Cold-Calling, but rather a reason to offer them the right support to overcome this.

No one knows your class better than you do. You know which students are confident, which are more shy, and which have additional support needs. You can take all of this into account when Cold-Calling.

Cold-Calling can be particularly useful when the flow of teacher exposition is important, or when you require a fast pace – an advantage it holds over Think, Pair, Share and mini whiteboards (more on these in a moment). The latter two can fragment exposition because they require the whole class to do something, diverting attention away from the teacher. This isn't always an issue, but is worth considering when choosing the best approach for you.

Here's an example illustrating how you can use Cold-Calling to infuse a chunk of teacher exposition with frequent questions:

Teacher: "Last lesson, we were learning about the Periodic Table. Could you tell us something that you remember about that, please... Emma?"

Emma: "It has lots of different elements in it."

Teacher: [Repeating Emma's answer] "It has lots of different elements in it. Do you agree... Richard?"

Richard: "Yes."

Teacher: "Okay, so do I. The Periodic Table has got lots of different elements in it. Could you name three of these for us, please... Jamie?"

Jamie: "Um... hydrogen... oxygen... and... um... I'm not sure."

Teacher: "Jamie says hydrogen and oxygen are elements in the Periodic Table, and he's right. Well done. But now he's stuck. Let's help him. How about I suggest water as one of them. Would that be right... Susan?"

Susan: "Yes."

Teacher: "Are you sure?"

Susan: "Erm... no."

Teacher: "Were you guessing?"

Susan: "Yes."

Teacher: "Okay. We're wondering if water is an element... Jamie – back to you."

Jamie: "No, it's not. Water's not in the Periodic Table."

Teacher: "Quite right. Water is not an element. It's something called a compound. We'll learn about these in a few lessons' time."

As you can see, you can use Cold-Calling with both open and closed questions, to both ask particular students about a specific thing and find out if other students agree with it, and to get students to comment and build on each other's answers.

2. THINK, PAIR, SHARE

What is Think, Pair, Share?

Think, Pair, Share involves getting students to think of an answer to a question individually, then discuss it with a partner, and finally share their thoughts with the rest of the class.

What are the benefits of Think, Pair, Share?

In [this study](#), 391 students were asked to self-report their level of shyness before being split into one of three groups:

1. “Think, Share”, where students had time to think about their answer before sharing it but couldn’t elaborate with a partner.
2. “Think, Pair, Share”, where students had time to think about their answer then elaborate with partners before sharing.
3. “Share”, where students had to immediately answer the question.

Students in the “Think, Pair, Share” group were about 1.7 times more likely to raise their hand than those in the “Share” condition, and were less anxious than those in the “Think, Share” group.

In [this other study](#), researchers found that students who were taught using Think, Pair, Share improved more in their speaking performance than those in the control group.

When to use Think, Pair, Share, and how to do it well

If we accept that thinking is the key to learning, we need to give students time to think. That’s why pausing after asking a question, even just for a few seconds, is so important in teaching. The “Pair” part of Think, Pair, Share offers extended thinking time for students.

Think, Pair, Share can also help address confidence issues with students. Talking something through with a peer before speaking in front of the whole class decreases the pressure students may feel. And if their answer is wrong, they know they weren’t the only one to think that, which helps alleviate potential embarrassment.

All of this said, the time that we have with students in each lesson is limited, and Think, Pair, Share is a time-consuming pedagogy. We must be proportionate in how much thinking time we give for each question we ask. In Cold-Calling, this will usually just be a few seconds. In Think, Pair, Share, it’s counted in minutes. If we used it every time we asked a question, we wouldn’t get through very much of our curriculum.

For this reason, as a rule of thumb, I would suggest that teachers get into the habit of pausing after every question but reserve

Think, Pair, Share for specific occasions, such as when the question is either particularly challenging or complex. You will likely get better answers than if you had Cold-Called students without giving them the chance to discuss first.

One way to reduce the time issue is to drop the “Think” part and go straight to “Pair”, after which you can use Cold-Calling to explore the thinking of a selection of students.

3. MINI WHITEBOARDS

What are mini whiteboards?

Mini whiteboards get all students to write down an answer to the teacher’s question. This ensures all students are both paying attention and engaged in Retrieval Practice.

What are the benefits of mini whiteboards?

In [this study](#), students with learning difficulties were found to make more improvement over the course of a month if they were taught using formative assessment strategies, one of which was mini whiteboards. This was echoed in [a separate study](#) where students learned Shakespeare and which found mini whiteboards enhanced both engagement and rate of learning.

When to use mini whiteboards, and how to do it well

Mini whiteboards (or show-me boards, which is the term I prefer) are a teacher’s best friend. They make all students think and commit to an answer. They also make all students’ thinking visible to the teacher, giving them the information they need to respond either immediately or in future lesson planning.

As with Think, Pair, Share, writing on and holding up mini whiteboards takes longer than Cold-Calling does. However, they allow you to find out about the thinking of all your students, as opposed to the only one you Cold-Call, which is the main reason why I believe they should be used so often.

There is no one best way to use mini whiteboards. Some teachers like all students to hold their boards up at the same time, others when each student is ready. One reason for all boards to go up

together is so students don't "cheat" by looking at other students' boards before holding theirs up. However, this all depends on the layout of the classroom. For example, if desks are all facing forwards, "cheating" is unlikely. Ultimately, it may be more time efficient to be able to look at mini whiteboards as and when they are held up, rather than waiting for everyone to be ready to hold them up.

As you look at mini whiteboards, you can do one of two things:

1. Make a note of the key points you are seeing, both correct and incorrect, to give generic feedback to the class as a whole. For example, you can address and correct a mistake you saw on many boards.
2. Give specific feedback to students in real time, for example to get them to rethink a specific point they got wrong.


As a general rule, the less students have to write on mini whiteboards, the easier it is for teachers to scan the room and take in the information they are looking for. Less is usually more.

However, mini whiteboards aren't just for writing – drawing can often be just as valuable. For example, when starting a topic on electricity with a class of 12-year-old students, you could address preconceptions by asking students to draw what they think electricity looks like on their mini whiteboards. The formative information that comes to the teacher from this should be invaluable.

FINAL THOUGHTS

We're aware that we titled this article "Cold-Calling vs Think, Pair, Share vs mini whiteboards", which infers that all these questioning strategies are in competition with one another – which they are. Two logical questions that stem from this are:

1. Is there a "best" approach?
2. Are there particular times when one approach might be better than another?



The first question has many possible answers. For Bruce Robertson, there is a “best”: mini whiteboards. However, Cold-Calling comes a close second, only because it limits finding out about the thinking of everyone. Think, Pair, Share is third simply because of the time it requires. Based on his experience, Bruce believes Think, Pair, Share is a more efficient and usually just as effective approach.

As for the second question, Bruce thinks there can be times when Cold-Calling and Think, Pair, Share (or Pair, Share) can trump mini whiteboards. Cold-Calling can win when the flow of exposition is paramount, when time is an issue, or when there simply aren't any mini whiteboards to use. Think, Pair, Share wins when you require challenging or complex thinking from your students.

Ultimately, there are no hard and fast rules. But hopefully, some of the suggestions from this article help you make your own decisions about the best techniques to use.