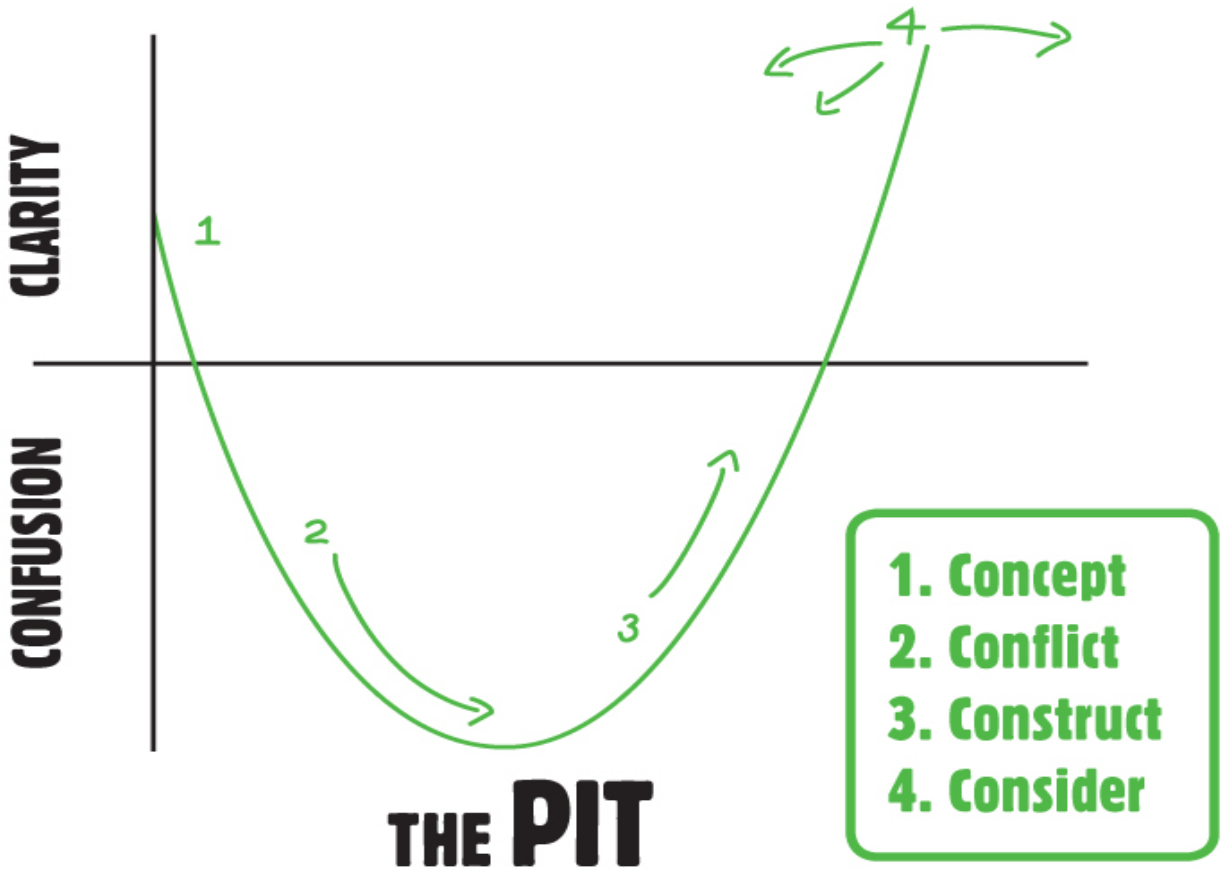
The Learning Pit

A framework for outstanding teaching

"Students who are taught by outstanding teachers exhibit an understanding of the concepts targeted in instruction that is more integrated, more coherent and at a higher level of abstraction than the understanding achieved by the other students."

(John Hattie, Influences on Student Learning, 2003, Page 18)[1]



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What is outstanding teaching?

Although there have been many lists of what makes an effective teacher, too few have been based on evidence from classrooms, particularly considering the effects on student learning: the learning of affective outcomes, respect and caring, and quality of achievement. Too often the lists have been based on simple analyses of single variables, on small numbers of teachers or on the values of the author.

However, Professor John Hattie and his team at the University of Auckland have summarised almost 500,000 studies investigating the characteristics of highly effective teachers. In his paper, "Teachers Make a Difference: What is the research evidence", first presented at the Australian Council for Educational Research (ACER) annual conference in October 2003 he notes that:

While almost every initiative taken in education can be shown to have a positive influence on student learning, outstanding teaching is the single most powerful influence on achievement. He goes on to say that:

- Outstanding teachers are better at relating lesson content to prior lessons, other school subjects, underlying principles and students' interests
- They are more flexible and opportunistic in pursuing the learning needs of individual students
- Expert teachers work harder at collecting and analysing feedback on the effectiveness of their own teaching and they make better decisions when planning lessons
- Outstanding teachers create classroom climates in which risks are encouraged and errors accepted. They are also more able than other teachers to deal with complex situations while maintaining a focus on student learning.
- In guiding learning, outstanding teachers seek more information about students, their abilities, experiences and backgrounds, and want to know more about the contexts in which they will be teaching
- They are more adept at monitoring student problems and assessing students' levels of understanding and progress, and they provide more relevant, useful feedback to learners.
- They more often develop and test hypotheses about individuals' learning difficulties and they have the ability to do all these things more or less automatically.

He finishes by saying that of the 16 main differences between expert and experienced teachers that he and his team found, three alone could "successfully classify 80% (of teachers correctly), so are probably sufficient to highlight the major differences." These were:

- Challenge
- Deep representation
- Monitoring and feedback

Of course even a study as comprehensive as Hattie's has issues, not least that it is a world study and so offers insights that may not be relevant to your context. For example, the impact of class size is shown in Hattie's study to have minimal impact on student achievement, which has many teachers puzzled. But, when we consider there are countries in the world with class sizes of 70 in which the students are still achieving good grades, then we begin to understand the problems with research on a world-scale.

Nonetheless, Hattie's study is compelling and at the very least worth serious consideration. So, for this reason, I have created a framework for outstanding teaching that seeks to increase the incidences of feedback, challenge and deep representation within lessons, and I've called it the "Learning Pit".

The Learning Pit

At an international conference on thinking, I heard Dr John Edwards using the metaphor of a "pit" to describe the difference between leaders who support their colleagues through transition and those who simply give up and return to the old way of doing things. As I listened, I thought that this would be an excellent way to explain to my students back at school why I was always challenging them. So, with the permission of John, who is now a close personal friend and colleague, I adapted the pit to explain the approach to learning that I'd been using for years, one that had inspired me during my teaching training back in the early 1990's.

If asked to remember my school days, I more often than not recollect a sense of boredom. I enjoyed time with my friends, having a laugh in lessons and all the sport. But the teaching, give or take one or two incidences, was dull, uninspired and seemingly irrelevant. And it turned me off learning and off education.

But all this changed when I met Chris Rowley, a lecturer at the then, Charlotte Mason College, a teacher training and outdoor pursuits university in the heart of England's Lake District. When I first met him, I was bemused: Chris didn't act as if he were a teacher.

Chris was more likely to say he was puzzled than to say he had the answer; more likely to answer a question with a question than to give even the hint of an answer. And not one of his lectures were "lectures"; they were inquiries, debates and arguments. Time with Chris could be summed up with the phrase:

Not all of your questions answered but…
all of your answers questioned

However, Chris didn't just teach me, he inspired me, challenged me and changed the way I thought. His teaching helped me achieve a First Class Honours degree and my future students to achieve outstanding grades.

I believe Chris epitomised outstanding teaching and the Learning Pit is not only dedicated to him but is an attempt to help us all teach in the "Rowley way".

The Learning Pit: a four-stage lesson plan

1. Identify a key CONCEPT
2. Create COGNITIVE CONFLICT
3. CONSTRUCT an understanding of the concept through social construction
4. CONSIDER the learning journey by reflecting on the thinking

Example

This is an example of the Learning Pit at work with 6 and 7 year old children

2, 7 and 8 … Which is different from the other two and why?

Stage 1 – Identify a key concept

Andrew: Seven because it's an odd number

James: What's an odd number?

Sarah: A number that can't be divided by two

Stage 2 – Challenge students' understanding of the concept

James: So, if I have £7, are you saying it can't be divided by two? How much would each person have if I shared £7 between 2 people?

Charlotte: £3.50 each

James: So is 7 not odd then, since it can be divided by two? What do we call a number that's not odd?

Daniel: Even

James: So, is 7 an even number?

Daniel: No

James: So what is an odd number?

Sarah: It can't be divided by two without leaving a remainder

James: But when I divided £7 by two, that didn't leave a remainder

Sarah: But 50p is not a whole number. You can't divide an odd number by two without splitting a whole number

James: Are you telling me that 50 is not a whole number?

Brenda: 50 pence isn't

James: This (holding a 50p piece) is not whole? Why not? It looks whole to me.

Andrew: But it's not a whole pound. It's half of a pound

James: So, what is an odd number then?

Charlotte: It's a number that can't be divided by two without changing the units.

James: Can you give me an example?

Charlotte: If I had 7 pound coins then I'd have to split one of them in half first

James: OK, so what about a £10 note? If I was going to split that between two people then I'd have to change the units then as well; so does that make 10 an odd number as well?

Charlotte: No. It's difficult to explain.

James: Anyone? Can anyone say what an odd number is?

All: Um …

Stage 3 – Construct meaning

At this point the class split into groups to work on a definition of an odd number. After some time, the suggested definitions included:

- An odd number is like "odd socks". If you wrap socks together in pairs and at the end have one left over then you have an odd number of socks
- An odd number ends in either: 1, 3, 5, 7 or 9
- An odd number is the whole number that comes between two consecutive even numbers
- An odd number cannot be divided by two without leaving a remainder or a half
- An odd number never appears as an answer in the two times table

Stage 4 – Consider

The children consider questions posed by the teacher such as:

1. What did you think an odd number was at the beginning of the lesson?
2. What changed your mind about this?
3. What ideas did you have when you were "in the pit"?
4. How did you get out of the pit? What helped clarify your ideas?
5. What's the difference between what you think an odd number is now and what you thought it was at the beginning of the lesson?
6. Can you think of any numbers that are neither odd nor even?
7. Is there any other way to describe an odd number?

Why Challenge Students?

When I introduce the Learning Pit, some people worry that it will take longer to achieve the lesson objectives or that it might frustrate students. This is true! But the long-term benefits tend to be more profound, longer-lasting and deeper understanding than might otherwise be the case.

Take for example, *Natalie the Navigator*, a satellite navigation system in my colleague's car that doesn't instruct so much as caresses us in the right direction. This colleague and I have been doing some work in Stoke on Trent, a city seemingly with no centre and no major landmarks; a place that is difficult to navigate for outsiders such as us. Thankfully though, the venue is always the same and Natalie normally gets us there with a minimum of fuss, not to mention a smile on our faces.

But one day, disaster struck: Natalie didn't work. No matter which one of her buttons we pressed, she just didn't respond. Despite having driven to the Repertory Theatre three times already, we ended up hopelessly lost. Every street looked familiar and every junction gave the impression of being the right one. Eventually we had to call for help and another Natalie guided us in.

Yet, as teachers, how often do we play the role of Natalie the Navigator? How often do we help our students to answer the question, help them to complete the experiment or to create the model? We show them how it's done, support them through the task and praise them when they get it right. But at what expense? What would happen if we weren't there? Would they be just as lost as Gordon and me or would they view this as an opportunity for growth?

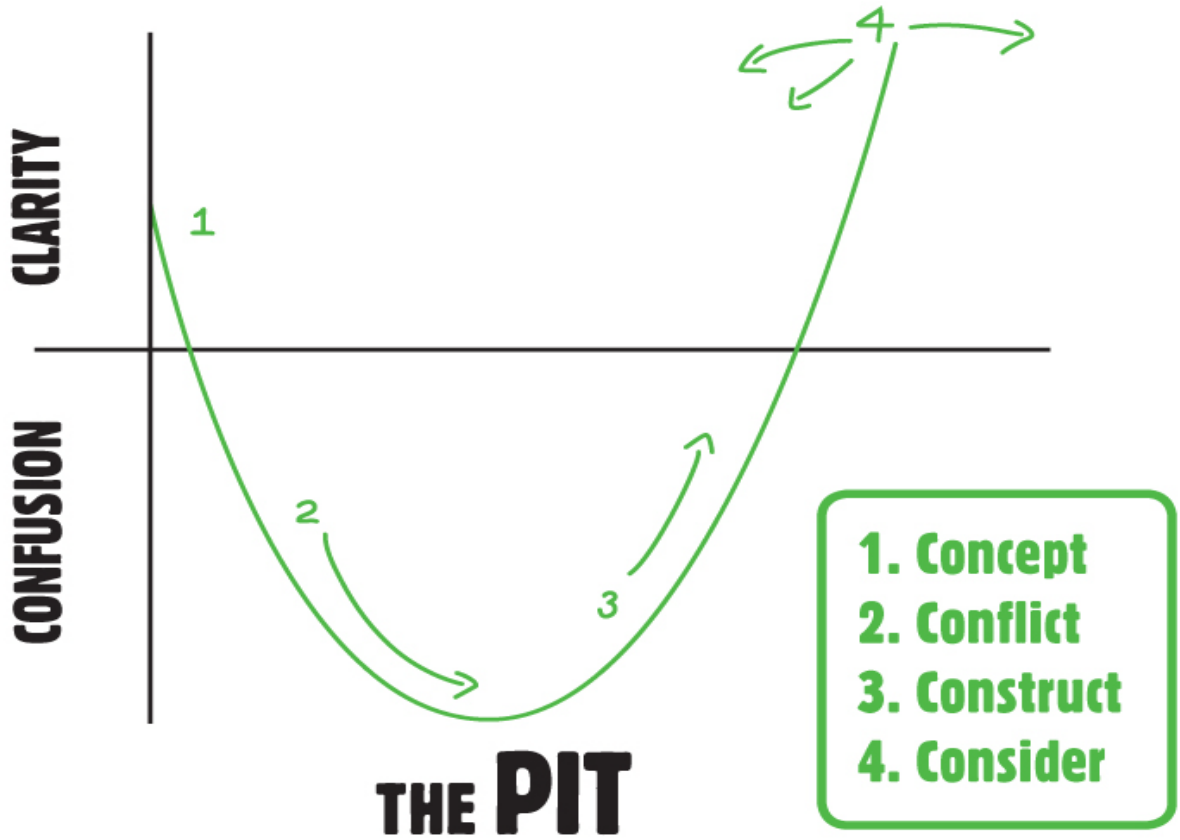
Having taught children and young people of all ages, my feeling is that there are more students in our schools who rely on the teacher to help them get it "right" than there are independent learners. There are many who achieve decent exam grades yet don't seem to be able to apply learning strategies to new contexts.

Carol Dweck, one of the world's leading researchers in the field of developmental psychology from Stanford University, suggests that very often it is the students who succeed most with teacher-led activities that are the ones who "are most worried about failure, most likely to question their ability and to wilt when they hit obstacles." [2]

So should we leave them to their own devices and see how they get on? I would not. Instead, the Learning Pit is about creating resistance, putting obstacles in our students' way and challenging as much as we can. Then, when at last they do arrive at their answer our students are more likely to have a real knowledge of how they got there as well as an idea of which learning strategies work for them. They should have a heightened sense of achievement and a desire to try their learning out in different contexts. They may even have learnt how to learn and be ready for whatever life throws at them.

Even if Natalie has another of her off-days.

The Four Stages of the Learning Pit



STAGE ONE: Identify the CONCEPT

The first stage of the PIT is to identify the concept. The example above uses the concept of "odd numbers", but there are worked examples on www.p4c.com that include: bullying, discovery, fair test, justice, predictions, similarity, tourism, perspective, worship, truth and many others.

Some of the concepts are philosophical, some scientific. Some are social, others are mathematical. In Philosophy for Children sessions, the concept might well emerge from the children's philosophical questions, whereas within curriculum subjects, the concept would probably be identified by the teacher during the planning process.

The key factor is that a key concept is identified and focussed upon.

STAGE TWO: Cognitive CONFLICT

This stage is about challenging the students: challenging their preconceptions, their prejudice and their thinking. It is intended to make learning more challenging and to avoid easy answers. There are of course problems as well as benefits to this approach, and these will be explored later.

Cognitive Conflict

Cognitive conflict is about creating a conflict of thoughts within each person. It is about setting up a conflict of opinions *within each* person (as opposed to a conflict *between* two or more people)

So, for example, if primary children are asked if Robin Hood was a "good man" they are most likely to say yes. This is thought number one: Robin Hood was a good man.

However, if they are then asked whether it would be good if someone in the class stole from a supermarket and gave the proceeds to the poor, their usual answer is no. This then prompts the second thought in their minds, "It is wrong to steal".

It is the conflict between the two (or more) ideas that creates tension and it is this dilemma that more often than not causes one's thinking to be more focussed and deliberate.

Take for example the idea of a friend. Children will most often say **"A Friend is someone I trust"** but does that mean that someone you trust is your friend? For example, **I trust the emergency services to help me in a crisis but they're not my friends**, are they?

Dilemmas and Thinking

The last time you had a dilemma, did you seek alternative answers, try to identify the real problem, ask for advice, or think about the relative merits of one approach compared with another? Or did you panic and stick your head in the sand? Both responses are common; which one you tend to resort to will be dependent on many factors. And it is the same with students.

If we can help our students through the panic stage then, when faced with a conflict, their thinking ought to take on a more purposeful and energetic quality.

The types of thinking most frequently used to deal with a dilemma include:

Information Processing

Including: Locating RELEVANT information; COMPARING, CONTRASTING, SORTING, CLASSIFYING and SEQUENCING

Reasoning

Including: Using SUPPORTING REASONS, PRECISE LANGUAGE, INFERENCES & DEDUCTIONS

Inquiring

Including: Asking relevant QUESTIONS, DEFINING problems, PREDICTING outcomes, TESTING conclusions

Creativity

Including: Looking for ALTERNATIVES and POSSIBILITES, GENERATING IDEAS & HYPOTHESES

Evaluating ideas

Including: Developing CRITERIA for JUDGING VALUE, generating rich personal and practical FEEDBACK

Compare these 5 broad categories of thinking with the thinking skills required by your school, local or national curriculum. Are they similar? And if so, then would the setting up of dilemmas for your students be a way to develop them further?

STAGE THREE: CONSTRUCT meaning

In the pit, pupils begin to construct meaning rather than learn easy answers. They offer each other suggestions and possible answers, and respond to feedback from their peers.

In the example of odd numbers, one 5 year old made a rare contribution to classroom discussion with the following suggestion:

> "Odd numbers are like socks!"
>
> When pressed for an explanation, he went on to say:
>
> "My mother believes that no matter how many socks she puts in the tumble dryer, she always gets an odd number out."
>
> The laugh from the class prompts him to justify his answer still further:
>
> "She lays out all the socks on the table. Then takes two and puts one inside the other. She keeps doing this until there's always one sock left over. That's the odd sock."

And in this way, children begin to make meaning rather than simply rote learn. They explain and justify their answers and draw comparisons with other aspects of life. They also move from either no answer or a learnt answer to a constructed answer such as the one given by another 5-year-old at the end of the maths lesson:

> "An odd number cannot be divided by two without having one left over, just like odd socks. And they always end in either: 1, 3, 5, 7 or 9"

Furthermore, the internal feedback that is a key part of Stage Two when students are in the Pit becomes more social as they start their ascent out of the Pit. For example, other students will respond to, and critique, the suggested answers of their peers. They will also reflect on what is being suggested by others and compare that with their own ideas.

Techniques for Constructing Meaning

There are many ways to encourage students to construct meaning, either by themselves or (more likely and, perhaps preferably) in dialogue and collaboration with others. These include identifying the:

Category	**Hierarchy**	**Classification**
e.g. Venn Diagrams	e.g. Diamond Ranking	e.g. Definitions

Examples of each of these, and many others available on "www.p4c.com" from April '08.

Example: Venn Diagrams

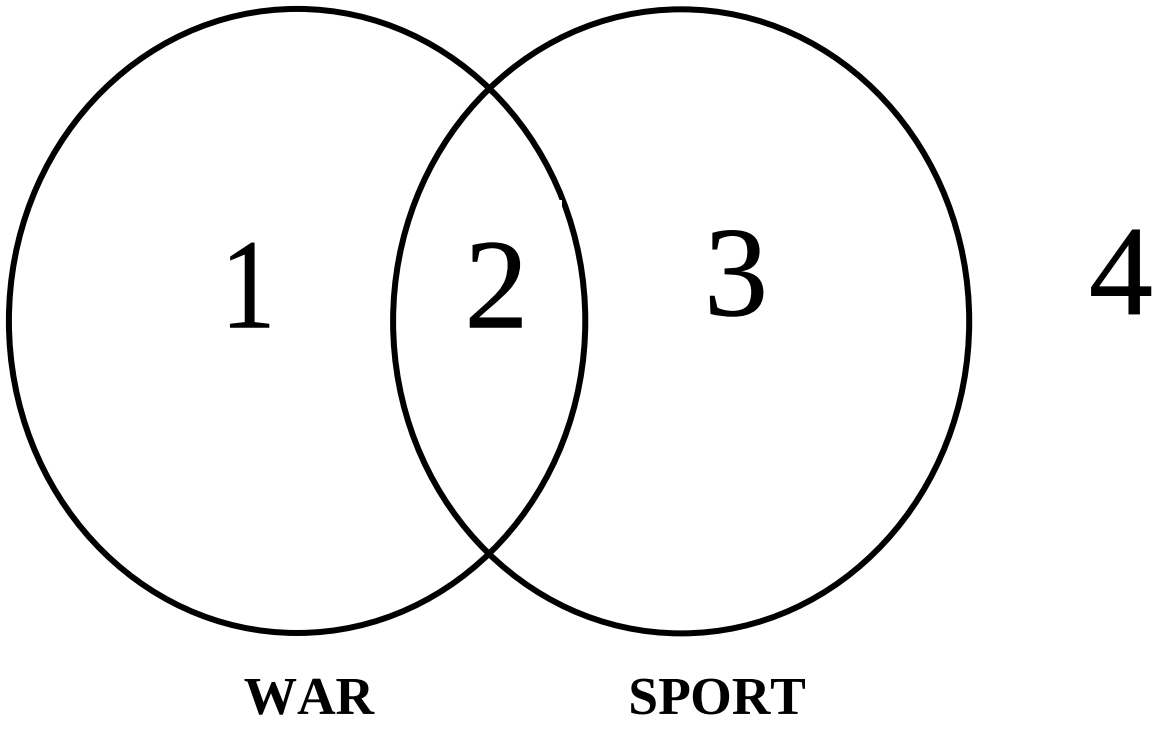
Venn Diagrams are a superb categorising tool and much loved by students when the subject matter is less contrived than many of the examples in their maths books.

The following example was borne out of a class discussion about sport. Intent on cognitive conflict, I had suggested that the vocabulary my students were using to classify "sport" was indistinguishable from the words often used to describe "war" (e.g. attack, defend, tactics, winning and losing) and so challenged them to identify the essential differences.

War and Sport

Identify which of these words and phrases belong to category 1 (sport but not war), category 2 (both sport and war), category 3 (war but not sport) and category 4 (neither sport nor war):

Attackers
Ranked
Winners
Advance
Prize
"Gentleman's agreement"
Rules
Offside
"Winner takes all"
Losers
Retreat
Bombardment
Fair play
"Back to Square 1"
Position
Defeat
Courage
Revenge
Tactics
Defend
Territory
Cheating



Further Examples

- Rivers and Lakes
- Happiness and Contentment
- Bravery and Foolishness
- Games and Sport
- Thoughts and Dreams
- Magic and Pretend
- Living and Real
- Evidence and Opinion

There are many more examples of Venn Diagrams, and other techniques for constructing meaning, available on www.p4c.com from April '08.

Venn Diagrams with very young children

Recently, I took part in an outstanding lesson with nursery children (3 and 4 year olds) in a school on Teesside. The teacher had laid out in a circle approximately 50 everyday toys and objects. She then showed the children a picture of a 4-year old boy and asked them to pick one of the objects from the circle that they thought might have belonged to the boy and to place it within a hoop that she'd laid on the floor.

After much discussion with the children about their choices (and a lot of cognitive conflict) she showed them a picture of a 4-year old girl and repeated the exercise, introducing a second hoop for the "girl's" possessions to be placed in.

Finally she showed a picture of the boy and girl hugging each other and at this point introduced a 3rd hoop (a nice step towards the abstract idea of overlapping hoops). This time she suggested that the children could not only pick objects that were left but also move any of the objects from the other two hoops into this third hoop.

All of this action was accompanied by in-depth dialogue in which the children were encouraged to justify their decisions, to agree/disagree with each other and to negotiate a final decision. Then just before the bell, a vote was taken as to which of the two, boy or girl, did the children think that ALL of the objects belonged to. Incidentally, I got the answer wrong!

Other similar examples I have seen used with Early Years and Special Needs children are:

- Presents for Grandma and Sister
- Clothes for a Hot Country and a Cold Country
- Food for a Dog and a Human

STAGE FOUR: CONSIDER the learning journey

Stage Four is about reviewing the learning journey and then previewing the next lesson.

Questions that help students to focus their thoughts, using the Learning Pit as a framework, include:

1. What was your first idea?
2. What challenged this idea?
3. What were the best bits/weaknesses of your (first) idea?
4. What thoughts did you have when in the pit?
5. What strategies did you consider?
6. What helped to clarify your thinking?
7. Can you come up with an analogy, metaphor or example to explain your thinking?
8. How do your ideas now differ from your earlier ideas?
9. What strategies or ideas could you use in future?
10. What does the key concept mean for you now?

This stage of the process is supported by the students knowing the Learning Pit framework and is one of the key reasons why I have "taught" the Pit to my students in the past. When they know the stages and the ideas behind the Learning Pit, then a shared language is developed that can be used to support each other's progress.

For example, students will declare they are "Still in the Pit" and need help, or that they have come out of the Pit and can help others left in the Pit. And who is most likely to be of assistance to someone in the pit: the teacher who was in the Pit years ago or the classmate who has just recently come out of the Pit?

For further information about the Learning Pit, please contact:

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For examples of concepts to begin the learning pit with or for lesson plans involving the pit, subscribe to www.p4c.com