THE THINKING TRAIN

Marion Williams

Teacher's Guide

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HELBLING

Why teach thinking?

As they progress through school, children need to acquire far more than the factual knowledge generally prescribed by school curricula. They need to be able to think about the knowledge they acquire to critically question what they read and hear and to assess evidence carefully. They need to practise forming opinions about what they learn and to express these views to others. In the long term, they will need to be equipped to face the challenges of a changing and unpredictable world in the future. To do this they will need a range of thinking skills to enable them to solve problems and make intelligent decisions, and to prepare them to face new and unpredicted problems and find the best ways of tackling them.

It is very important to begin to develop thinking skills from an early age. Children are capable of high levels of thinking if given the chance. Unfortunately they are not always given this opportunity in school as they are often constrained by having to give correct answers, or answers that the teacher is looking for. They might also be afraid of giving a wrong answer, or of giving unusual or different answers. However, these creative and less usual answers are often ones that will lead to new solutions and ideas. The ability to think can be successfully developed if done appropriately. We will therefore devote a section of this guide to the teacher's role in this.

Why this approach?

The approach we are taking with the activities in these books is to integrate the teaching of language and thinking. The reason for this approach is twofold. Firstly, it means that the children are much more likely to be cognitively engaged in the activities they are presented with. There is a danger with activities designed for foreign language learners that, when the language is simplified, the intellectual challenge is also removed, which can lead to boredom and lack of engagement in the activity. Thus children often carry out foreign language activities without having to think very deeply. Even if the language in these books is carefully graded we aim to present a cognitive challenge and keep learners engaged throughout each activity.

Secondly, language teaching methodology favours a communicative approach to teaching language where the language has a real purpose. Thinking about issues gives the learners an authentic reason to use the language, whether it is to solve a problem, to select something, or to sort things into categories. They are also encouraged to think together where possible, creating a community of enquiry in the classroom. And, importantly, the new language becomes more memorable.

See Herbert Puchta and Marion Williams' book *Teaching Young Learners to Think* (Helbling Languages, 2011) for further information on the rationale behind this approach and a selection of activities that integrate language and thinking.

The power of story

Storytelling is a greatly motivating resource for any classroom. Narratives are the building blocks of our emotional and intellectual development. We create stories every day; 'tell me about your holiday', 'tell me about your weekend', 'tell me about your day', 'tell me about your dreams'. We retell stories for entertainment and learning: 'Have you heard...?', 'Did you know...?', 'What's new?', 'Tell me about yourself.' We are, as Kieran Egan says, 'a storying animal' (Kieran Egan, *Teaching as Storytelling*, University of Chicago Press, 1989).

Children love stories. A good story absorbs them completely. Stories serve as fuel to your students' imagination. They provide a real context for developing the language you want to teach, and are an ideal springboard for developing language. Once the children are engaged in the story, you can develop it in many different ways. You can ask them to predict what will happen; you can ask why the character did something, how they think the person felt, or what they would do; you can ask them to act a part of the story; or you can develop it into art and craft. Picture books, such as these ***Thinking Train*** stories, are particularly important as the illustrations provide a real visual support to the language presented and help create a situation that the reader immediately feels part of. In today's increasingly visual world, developing visual literacy through picture books is particularly important.

Stories and thinking skills

Stories are also an excellent vehicle for promoting thinking with children. Stories are where children first learn about and come to understand the world around them. They provide imaginary scenarios where they can roleplay difficult situations before they have to really deal with them. They introduce abstract concepts such as anger, joy, love and loss and help readers understand better their own emotional reactions and the reasons behind them. And they allow young children to develop theory of mind, the realisation that other people have different thoughts, ideas and feelings to ourselves.

One example of how stories have been used with great success in developing thinking is a programme called *Philosophy for Children* (often called P4C) created by Matthew Lipman and his associates (Lipman et al., 1980) and now used in many different countries. *Philosophy for Children* starts with a specially written story that involves thinking. The children decide on a topic they would like to discuss that arises from the story and then vote democratically on which topic to discuss. The teacher then facilitates a student-led discussion. Children speak in turn and listen carefully to what the others say without interrupting them so they can respond to it or build on the conversation. The discussion creates respect for other while developing, listening and thinking skills, and self-discipline. The participants develop as a community of enquiry. It taps into children's natural curiosity, engages them in the search for meaning, and strengthens reasoning skills.

The ten books in ***The Thinking Train*** series all involve thinking. They are also based on important values or moral issues which the children can explore and discuss.

Approaches to teaching thinking

In recent years associations dedicated to developing 'thinking schools' and promoting the teaching of thinking through the whole curriculum have been set up in different countries. Some more information can be found on the thinkingfoundation.org website, which provides a wealth of interesting resources and information on approaches to teaching thinking.

Some of the resources available for teaching thinking are chapters from *Student Successes with Thinking Maps* (Hyerle, Alper, 2011). Thinking maps help us to organise our thoughts in a diagram or map. We make use of thinking maps in some of the activities we have designed. They can be used for comparing and contrasting things, for sorting things, or for brainstorming what we know about something. Look, for example, at the 'double bubble' on page 5, which is taken from *The jaguar and the cow*, and is used to compare and contrast things.

Basically, if children are encouraged to think from an early age, they are capable of much higher levels of achievement later in life. But it is important to do this sensitively and appropriately. As we have indicated, stories are a rich resource for developing thinking and once you have used the activities in these books we hope you will develop your own ideas. We focus on a number of different areas of thinking in this series of books. We will now explain what is involved in each of these and in particular why it is so important to develop them in children. We will use some of the activities in ***The Thinking Train*** books as examples. However, many more examples can be found in Puchta and Williams' book *Teaching Young Learners to Think*.

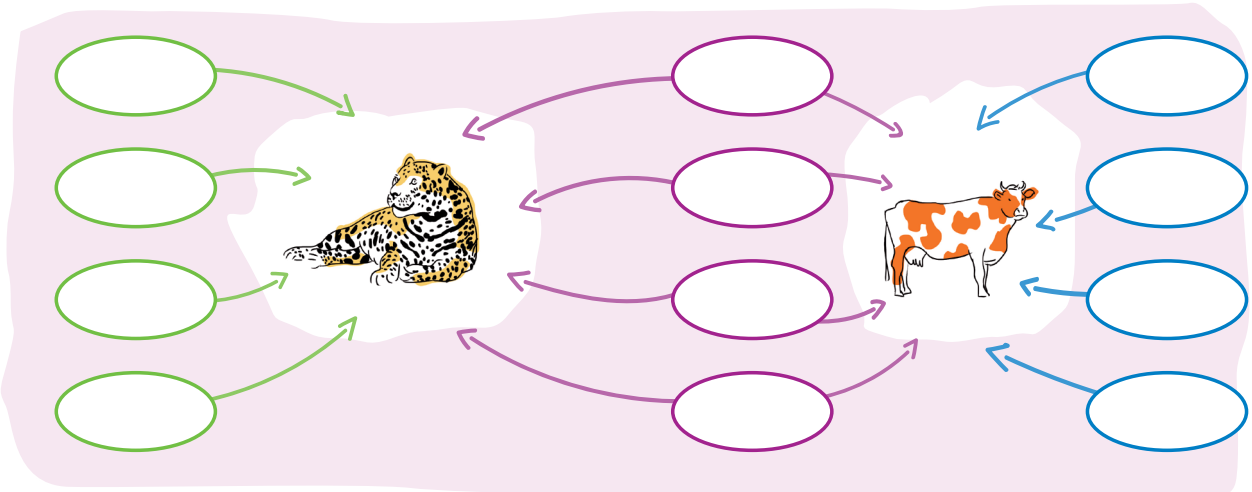
Different thinking areas covered in *The Thinking Train* series

MAKING COMPARISONS; COMPARING AND CONTRASTING THINGS

We will start with making comparisons as this is one of the basic building blocks of much higher order thinking like decision making and problem solving, and is an essential skill in most aspects of life. It is also necessary in reading. At a very basic level children need to compare shapes to recognise words, and at a higher level they need to compare the new information that they read to what they already know. Comparisons are essential in absorbing new information and memorising, as when we bring new information into our consciousness our mind compares this with what we already know, and thus manages to store it. In fact the very act of comparing things affects the way we perceive something.

Making comparisons entails attending carefully to detail in information given, and applying accurate labels to things and categories of things. We also need to be able to recognise different attributes in objects such as size, shape, colour, taste or orientation in order to compare them. This involves seeing, for example, that there is a difference between two objects that look the same but are different sizes. It requires concentration and focussed attention, two important skills in thinking.

You can develop this skill by using mind maps to compare and contrast two things, like the 'double bubble' used in *The jaguar and the cow*.



In the centre bubbles the children write things that are the same, and down the side, things that are different. This tool can develop deep thinking as well as encourage creative thinking.

In *Roberto's backpack,* the children draw a picture of themselves and then note similarities and differences between themselves and Roberto.

Noticing similarities also helps develop empathy between people. If children do not learn to compare things adequately, this can compromise other aspects of their cognitive development. Their memories can suffer as they are unable to store information effectively. Comparing new information with existing knowledge also affects the clarity with which we perceive things as we see new things in the light of other more familiar things. There are also more wide-ranging implications of not recognising similarities in life, leading to distrust between people and groups of people based on differences.

CATEGORISING AND SORTING

We constantly sort things. We sort things when we put them away. We classify plants and animals. In this way we organise the world around us. Children need to learn how to organise their world by sorting it into categories. This means they need to see the connections between different things and concepts in order to sort them. They also need to see that there are different ways of grouping things. For example, younger children may group objects according to colour, older ones according to their function. To categorise things we need to be able to gather data, examine it carefully, and look for attributes that can form the basis for classification.

In *At the zoo,* young children are asked to sort the animals into those that live in water, on land, or can fly. In *The bully*, the children are asked to sort things into a 'happy box' and a 'sad box'.

SEQUENCING

Sequences are an integral part of our lives. Events happen in a sequence, a story is told in a sequence, instructions are given in a sequence, numbers contain sequences, our day happens in a sequence. Being able to put things into a sequential order is an important function in day-to-day life. We need to be able to follow instructions in the right order, and also to give instructions in a logical order as well as understand the needs of the listener. We also need to understand what we need to do next.

In *What are you doing, Daniel?*, the children are asked to put what people say in order, thereby testing their understanding of the story. In *A problem for Prince Percy*, they are asked to interpret what happened after the story in their own way and put the speech bubbles in order. For this they need a deeper understanding of the characters and the types of things they might say. In *The three seeds,* the children work out the next object in a sequence of objects.

SPATIAL AWARENESS

We live in space; in a room, in a house, in a workplace, in a town, in the world. We need a reference system to understand the space we live in and to navigate our way through it. We need to find our way to places, and to move about in the world knowing where we are going. We also need to have some control over the space we live in.

It is important for people to develop a sense of position (where they are), a sense of distance (how far), a sense of direction (left, right, up, down), and perspective (things look smaller if they are further away). At a more complex level, we need to develop the ability to visualise what something or someone would look like if we looked from a different position; this is an important component of higher order thinking.

If children are not able to understand relationships in space they will have difficulties seeing objects in context, making it difficult to analyse a problem. If people can only see things in relation to themselves rather than in relation to others they will have difficulties in higher order thinking.

In *The three seeds,* the children see a blank vegetable garden. They need to understand concepts and language of position such as *left of, right of, opposite,* in order to place the vegetables in the right beds.

CAUSE AND EFFECT

To be effective in life we need to understand the consequences of our actions and of our behaviour towards others in society. This means we need to be responsible for our actions and to modify our actions where necessary. It's important to be able to manage our own impulsiveness and act in a self-disciplined way. We need to think before we act and be able to anticipate what might happen if we act in a certain way. A lack of this ability can lead to criminal behaviour. Understanding cause and effect is also essential for scientific thinking. Giving children activities that ask 'What would happen if ...?' is a good way of developing this skill.

The bully is all about cause and effect. Charlie is unkind to his classmates so they don't attend his birthday party. But he didn't anticipate this.

DECISION MAKING

We make decisions every day. We decide what to do, what to eat, what to buy, what university to attend, what gift to give someone, how we can help someone. Our decisions help us to make sound judgements. They are vital in everyday life. A bad decision can cause suffering for someone else, an accident, a disaster in life. A bad business decision can lead to a bank collapsing, a business failing, a business proposition lost.

The process of making a decision follows a sequence of defining the situation, considering all possibilities, and calculating the consequences of each possibility. An inability to predict possible outcomes of action will lead to poor decisions and impulsive behaviour.

SOLVING PROBLEMS

We constantly face problems in our lives; how to deal with a difficult client, how to find where something is, working out what to do if something breaks down, finding solutions to work problems. We need to be able to think strategically to tackle problems. Most problems have several possible solutions, none perfect, and we can choose the best solution from these.

To solve a problem we need to go through a sequence of steps; recognise the nature of the problem, plan how to solve it, act and observe what happens, and finally, review what happened. It is important to develop these skills in children. It is also important to foster the right disposition, not to be put off by facing a problem and believing that it is possible to find a solution.

In *A problem for Prince Percy*, the prince has a tricky problem to solve. He does so by thinking carefully about the situation and carefully planning what he will do. The children try to solve the problem before the answer is revealed. The readers also engage in a problem-solving activity where they work out who gave which present to the prince and princess. By reading stories with a focus on problem solving, such as *A problem for Prince Percy*, children absorb the message of the narrative and learn to apply it to their own lives.

CREATIVE THINKING

A lot of formal education focuses on analytical thinking and following logical arguments, both of which are necessary in many areas of life. However, the ability to think creatively is essential to success. Creative thinkers come up with new and original ideas and ways of looking at things. Creative thinking leads to new inventions, innovation in the workplace, and allows society to advance in new directions. In order to develop students' creativity it is important that no ideas or contributions are rejected, that all offerings are treated with respect. Linked to creative thinking is the ability to create associations or make connections between things. Such associations can often lead to new discoveries. Thinking creatively involves an element of playfulness and letting the imagination run. In *At the zoo,* the children think creatively about what they would do if they were supergirl or superboy. There is an activity in *The bully* where the children place items in a 'happy box' or a 'sad box'. This involves sorting but also finding associations between things and happy feelings or sad feelings. There is no 'right' answer; something like rain might be happy for some and sad for others.

OTHER THINKING SKILLS COVERED

Each story involves a range of thinking skills. We have discussed some of the main skills covered, but the stories integrate many more of the skills involved in thinking. One major skill is predicting, predicting from the story so far what will happen next, an important life skill which is essential in making decisions. As they read the story, teachers need to frequently ask 'What happens next?' Other key skills are being able to focus attention, attend to detail, survey information carefully, plan how to tackle a problem, recognise different attributes such as size and shape, apply labels to things, think carefully about a problem and believe one can find a solution. Once a teacher becomes accustomed to promoting thinking, they will ask questions that promote these skills as they read the stories.

The teacher's role in teaching thinking

Teachers play a very important role in helping their students to develop their thinking. This needs to be carried out sensitively, positively, and with a lot of encouragement. The most important point to convey to children is that they are allowed to think freely and creatively, and that they won't be criticized for producing creative or different solutions. Indeed, creative thinking should be encouraged, and all ideas should be listened to and taken seriously. Problems arise if children think they need to always produce answers that the teacher wants and they might be put down if they don't. This often inhibits thinking creatively and logically about other solutions.

It is important to give children time to think carefully about problems. Children often think that they should be the first to put their hands up with an answer and so they often rush to a quick solution. However, this can lead to impulsive guesses or simplistic answers rather than well thought-out solutions. Teachers need to remind the class to take time to think carefully rather than rush to an answer in order to encourage deeper levels of thinking.

It is also important to listen to all suggestions the children give and take them seriously. Their ideas should never be rejected out of hand. You might like to challenge the child to think more deeply by asking 'How do you know?', or, 'Why do you think this?', so that the students learn that their suggestions have to be backed up by reasons. This will help them to develop the habit of thinking about reasons for what they say.

In real life when we need to find a solution to a problem there often isn't one 'right solution' but a best solution for that particular situation. The aim of a thinking class is often to seek best solutions rather than right solutions. Children can be encouraged to suggest different solutions, and if appropriate the children can vote on the best one.

It is also important that teachers 'scaffold' the thinking process, that is, support learners in developing their ability to think logically by asking questions to help them think. You can use challenging questions like 'What's the problem?' 'What do we need to do?', 'What evidence do we have?', 'Why do you think this?', 'How did you work this out?'.

One of the most important roles that teachers have is fostering a sense of competence in their learners, a belief that they are capable of solving problems, or the sense of 'I can do this'. This is done by building up learners' confidence in their abilities, and teaching learners to take control of their learning by teaching them strategies to solve problems, how to set their own goals and evaluate their progress. If learners think that they can't do something, this imposes an enormous block to learning which can be very difficult to remove.

The role of errors

We need to remember that errors are a natural part of learning. It is by making mistakes and learning from them that we progress in our learning. We make mistakes in our attempts to communicate, and these experiences help us to notice what we have said that is wrong and learn how we can communicate more effectively. In particular, when the person we are communicating with provides the right word or phrase, we progress in our learning.

In the same way, in developing their ability to think, students need the freedom to make mistakes. They need to experiment with ideas and try things out. An error in solving a problem helps the learner modify their cognitive strategy, and find a better way to solve the problem. Teachers should never criticize students for coming up with a wrong answer as this will have a detrimental effect on their learning. Instead, they should scaffold the student towards seeking a better strategy for finding a good answer.

Checklist for teachers

This checklist is for you to keep a record of the thinking skills you have covered in exploring the story and carrying out the activities.

Which thinking skills did I cover? Tick (√) and add your comments.

- ☐ Assessing evidence .....
- ☐ Categorising .....
- ☐ Cause and effect, seeing consequences of action .....
- ☐ Choosing .....
- ☐ Comparing and contrasting .....
- ☐ Creative thinking .....
- ☐ Decision making .....
- ☐ Drawing conclusions .....
- ☐ Focusing attention, noticing (detail) .....
- ☐ Making connections, making associations .....
- ☐ Matching .....
- ☐ Planning .....
- ☐ Predicting .....
- ☐ Problem solving .....
- ☐ Sequencing .....
- ☐ Spatial awareness .....

My comments on the thinking skills I covered.

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Teacher self-appraisal checklist

After reading the story with the class and carrying out the activities, think and assess how well you did on each of these aspects. Can you identify any that you need to work on?

Did I...	Yes	No	How I need to improve
ask questions that promoted thinking?			
encourage students to take time to think?			
listen carefully to what my students say?			
accept all contributions and acknowledge them positively?			
comment positively on each student's comment (*That's interesting. Tell me more.*)?			
'scaffold' thinking where necessary to help students to think. (*What's the problem? What do we need to do?*)?			
ask for reasons behind contributions and challenge them if necessary (*Why do you think that?*)?			
make sure students listen to each other?			
ask for students' opinions about the story and the activities?			
build up feelings of '*I can*'?			
As I read the story did I...			
use drama to bring the story alive?			
ask questions about how the characters felt?			
ask the students to predict what will happen next?			
ask the students to describe the characters or settings?			

My reflections after finishing the story

What have I learnt about my students?

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What are my aims for doing better next time?

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THE THINKING TRAIN

The Thinking Train is unique series of picture books by Herbert Puchta, Günter Gerngross and Gavin Biggs which focus on the development of children's thinking skills through the use of stories. When children are involved in thinking and also in talking about their thinking with others, they reach higher levels of achievement in the future as well as developing superior thinking skills.

The Thinking Train stories will encourage a love of reading and promote thoughtful interaction with books while developing children's thinking skills. The activities, in carefully graded English, will automatically develop and practise their language skills, too.

LEVEL	A	B	C	D	E	F
Cambridge English	Starters	Starters	Starters	Movers	Movers	Flyers
Trinity	1	1	1	2	2/3	3/4

ONLINE GAMES + MP3

The Thinking Train is a unique series of picture books, which focus on developing children's thinking skills through enchanting graded stories.