

# Habits of Mind



## Questioning & Posing Problems

### Express Students' Resource

Name: \_\_\_\_\_

Class: \_\_\_\_\_

## **Section 1 Definition**

Self-directed learners exhibit both a willingness and ability to inquire about and seek out information. Effective problem solvers know how to ask questions to fill in the gaps between what they know and what they don't know. They asked themselves: "What do I know? What do I want to know? What have I learnt?" to generate questions.

## **Section 2 Indicators of the Habit**

- Students ask questions, enjoy problem solving and are curious.
- They ask a variety of questions, for example:
  - ❖ Students pose questions about alternative points of view: "From whose viewpoint are we seeing, reading or hearing? From which angle, what perspective are we viewing this question?"
  - ❖ Students pose questions that make casual connections and relationships: "How are these (people, events or situation) relate to each other? What produced this connection?"
  - ❖ Sometimes they pose hypothetical problems characterized by "if" questions: "What do you think would happen if ....?" "If that is true, then what might happen if..."
  - ❖ Inquirers recognize discrepancies and phenomena in their environment, and they probe into their causes: "Why do cats purr? What are some alternative solutions to international conflicts other than war?"
- They seek additional information by asking: "Tell me more" "where else can I get information?"
- They make analogies: "This reminds me of...", "It's like..."
- They make statements that reflect the "I enjoy" attitude: "This is fun!", "I would like more time," "How exciting!"
- They show enthusiasm in facial expressions
- They listen to other people's ideas.
- They look closely at things and explore.
- They observe using a variety of senses (touch, smell...).

# Lesson 1

## Cinderella

Appendix L1.1

Once upon a time, there lived an unhappy young girl. Unhappy she was, for her mother was dead, her father had married another woman, a widow with two daughters, and her stepmother didn't like her one little bit. All the nice things, kind thoughts and loving touches were for her own daughters. And not just the kind thoughts and love, but also dresses, shoes, shawls, delicious food, comfy beds, as well as every home comfort. All this was laid on for her daughters. But, for the poor unhappy girl, there was nothing at all. No dresses, only her stepsisters' hand-me-downs. No lovely dishes, nothing but scraps. No nice rests and comfort. For she had to work hard all day, and only when evening came was she allowed to sit for a while by the fire, near the cinders. That is how she got her nickname, for everybody called her Cinderella. Cinderella used to spend long hours all alone talking to the cat. The cat said,

"Meow", which really meant, "Cheer up! You have something neither of your stepsisters have and that is beauty."

It was quite true. Cinderella, even dressed in rags with a dusty grey face from the cinders, was a lovely girl. While her stepsisters, no matter how splendid and elegant their clothes, were still clumsy, lumpy and ugly, and they always would be.

One day, beautiful new dresses arrived at the house. A ball was to be held at Court and the stepsisters were getting ready to go to it. Cinderella, didn't even dare ask, "What about me?" for she knew very well what the answer to what would be.

"You? My dear girl, you're staying at home to wash the dishes, scrub the floors and turn down the beds for your stepsisters. They will come home tired and very sleepy." Cinderella sighed at the cat.

"Oh dear, I'm so unhappy!" and the cat murmured "Meow".

Suddenly something amazing happened. In the kitchen, where Cinderella was sitting all by herself, there was a burst of light and a fairy appeared.

"Don't be alarmed, Cinderella," said the fairy. "The wind blew me your sighs. I know you would love to go to the ball. And so you shall!"

"How can I, dressed in rags?" Cinderella replied. "The servants will turn me away!" The fairy smiled. With a flick of her magic wand, Cinderella found herself wearing the most beautiful dress, the loveliest ever seen in the realm.

"Now that we have settled the matter of the dress," said the fairy, "we'll need to get you a coach. A real lady would never go to a ball on foot!"

"Quick! Get me a pumpkin!" she ordered.

"Oh of course," said Cinderella, rushing away. Then the fairy turned to the cat.

"You, bring me seven mice!"

"Seven mice!" said the cat. "I didn't know fairies ate mice too!"



"They're not for eating, silly! Do as you are told, and remember they must be alive!"

Cinderella soon returned with a fine pumpkin and the cat with seven mice he had caught in the cellar.

"Good!" exclaimed the fairy. With a flick of her magic wand -- wonder of wonders! The pumpkin turned into a sparkling coach and the mice became six white horses, while the seventh mouse turned into a coachman, in a smart uniform and carrying a whip. Cinderella could hardly believe her eyes.

"I shall present you at Court. You will soon see that the Prince, in whose honour the ball is being held, will be enchanted by your loveliness. But remember! You must leave the ball at midnight and come home. For that is when the spell ends. Your coach will turn back into a pumpkin, the horses will become mice again and the coachman will turn back into a mouse, and you will be dressed again in rags and wearing clogs instead of these dainty little slippers! Do you understand?"

Cinderella smiled and said, "Yes, I understand!"

When Cinderella entered the ballroom at the palace, a hush fell. Everyone stopped in mid-sentence to admire her elegance, her beauty and grace.

"Who can that be?" people asked each other. The two stepsisters also wondered who the newcomer was, for never in a month of Sundays, would they ever have guessed that the beautiful girl was really poor Cinderella who talked to the cat!

When the prince set eyes on Cinderella, he was struck by her beauty. Walking over to her, he bowed deeply and asked her to dance. And to the great disappointment of all the young ladies, he danced with Cinderella all evening.

"Who are you, fair maiden?" the Prince kept asking her.

But Cinderella only replied: "What does it matter who I am! You will never see me again anyway."

"Oh, but I shall, I'm quite certain!" he replied.

Cinderella had a wonderful time at the ball, but, all of a sudden, she heard the sound of a clock: the first stroke of midnight! She remembered what the fairy had said, and without a word of goodbye she slipped from the Prince's arms and ran down the steps. As she ran she lost one of her slippers, but not for a moment did she dream of stopping to pick it up! If the last stroke of midnight were to sound... oh, what a disaster that would be! Out she fled and vanished into the night.

The Prince, who was now madly in love with her, picked up her slipper and said to his ministers, "Go and search everywhere for the girl whose foot this slipper fits. I will never be content until I find her!" So the ministers tried the slipper on the foot of all the girls... and on Cinderella's foot as well... Surprise! The slipper fit her perfectly.

"That awful untidy girl simply cannot have been at the ball," snapped the stepmother. "Tell the Prince he ought to marry one of my two daughters! Can't you see how ugly Cinderella is! Can't you see?"

Suddenly she broke off, for the fairy had appeared.

"That's enough!" she exclaimed, raising her magic wand. In a flash, Cinderella appeared in a splendid dress, shining with youth and beauty. Her stepmother and stepsisters gaped at her in amazement, and the ministers said,

"Come with us, fair maiden! The Prince awaits to present you with his engagement ring!" So Cinderella joyfully went with them, and lived happily ever after with her Prince.

## The Tortoise and the Hare

Once upon a time there was a hare who, boasting how he could run faster than anyone else, was forever teasing tortoise for its slowness. Then one day, the irate tortoise answered back: "Who do you think you are? There's no denying you're swift, but even you can be beaten!" The hare squealed with laughter.

"Beaten in a race? By whom? Not you, surely! I bet there's nobody in the world that can win against me, I'm so speedy. Now, why don't you try?"

Annoyed by such bragging, the tortoise accepted the challenge. A course was planned, and the next day at dawn they stood at the starting line. The hare yawned sleepily as the meek tortoise trudged slowly off. When the hare saw how painfully slow his rival was, he decided, half asleep on his feet, to have a quick nap. "Take your time!" he said. "I'll have forty winks and catch up with you in a minute."

The hare woke with a start from a fitful sleep and gazed round, looking for the tortoise. But the creature was only a short distance away, having barely covered a third of the course. Breathing a sigh of relief, the hare decided he might as well have breakfast too, and off he went to munch some cabbages he had noticed in a nearby field. But the heavy meal and the hot sun made his eyelids droop. With a careless glance at the tortoise, now halfway along the course, he decided to have another snooze before flashing past the winning post. And smiling at the thought of the look on the tortoise's face when it saw the hare speed by, he fell fast asleep and was soon snoring happily. The sun started to sink, below the horizon, and the tortoise, who had been plodding towards the winning post since morning, was scarcely a yard from the finish. At that very point, the hare woke with a jolt. He could see the tortoise a speck in the distance and away he dashed. He leapt and bounded at a great rate, his tongue lolling, and gasping for breath. Just a little more and he'd be first at the finish. But the hare's last leap was just too late, for the tortoise had beaten him to the winning post. Poor hare! Tired and in disgrace, he slumped down beside the tortoise who was silently smiling at him.

"Slowly does it every time!" he said.

Source: [http://childhoodreading.com/Arthur\\_Rackham/Tortoise\\_and\\_the\\_Hare.html](http://childhoodreading.com/Arthur_Rackham/Tortoise_and_the_Hare.html)

## Battle of Singapore

The **Battle of Singapore** was a battle of the South-East Asian theatre of World War II, from February 7, 1942 – February 15, 1942. The fall of Singapore represented the largest surrender of British-led military personnel in history. About 80,000 Indian, Australian and British troops became prisoners of war, joining 50,000 taken in the Malayan campaign.

When the 25th Army invaded Malaya in December 1941 it was resisted by III Corps of the Indian Army — including the Australian 27th Brigade and several British Army battalions. Japanese forces held a slight advantage in terms of numbers on the ground in northern Malaya, but were superior in close air support, tanks, infantry tactics and experience.

Japanese air superiority also enabled the destruction of the supposed Allied trump card: the battleships HMS *Prince of Wales* and HMS *Repulse*. Japanese forces advanced steadily down the Malayan peninsula toward the supposedly "impregnable fortress" of Singapore Island, a lynchpin of the American-British-Dutch-Australian Command (ABDACOM), the first Allied joint command of World War II.

On January 31, the last Allied forces had left Malaya, and Allied engineers blew a hole, 70 feet (20 metres) wide, in the causeway linking Johore and Singapore. However, Japanese raiders and infiltrators — often disguised as Singaporean civilians — began to cross the Straits of Johor in inflatable boats soon afterwards.



## Lesson 2

Self-directed learners exhibit a both a willingness and ability to inquire about and seek out information. Effective problem solvers know how to ask questions to fill in the gaps between what they know and what they don't know. They asked themselves: "What do I know? What do I want to know? What have I learnt?" to generate questions.

### **The Three Levels of Questioning**

There are three levels of questioning, mainly:

***INPUT: Gathering and Recalling Information***

***PROCESSING: Making sense out of the information gathered***

***OUTPUT: Applying and evaluating actions in novel situations***

<b>Levels of questioning</b>	<b>Related behaviours</b>
1. <b>Input:</b> Gathering and Recalling Information	Completing Counting Defining Describing Identifying Listing Matching Naming Observing Reciting Scanning Selecting
2. <b>Process:</b> Making sense out of information gathered	Analyzing Categorizing Classifying Comparing Contrasting Distinguishing Experimenting Explaining Grouping Inferring Making analogies Organizing Sequencing Synthesizing
3. <b>Output:</b> Applying and evaluating actions in novel situations	Applying a principle Evaluating Extrapolating Forecasting Generalizing Hypothesizing Imagining Judging Model building Predicting Speculating

## Student Self- Evaluative Worksheet

	<i>Often</i>	<i>Sometimes</i>	<i>Not Really</i>
<i>Do you look closely at and explore things ?</i>			
<i>Do you observe using a variety of senses ? ( Touch, smell, taste, sight &amp; sound )</i>			
<i>Are you enthusiastic in listening to what others have to share?</i>			
<i>Are you eager to share your ideas and opinions with others?</i>			
<i>Do you seek out new knowledge and create challenges to overcome ?</i>			
<i>Do you ask a variety of questions: "Why?" "How come?" "What if?"</i>			
<i>Do you seek additional information and find yourself saying these phrases: "Tell me more." "Where else can I get information?"</i>			
<i>Do you make analogies and find yourself saying these phrases: "This reminds me of..." "It's like..."</i>			
<i>Do you notice yourself saying and reflecting on the " I enjoy learning " attitude? ( For eg, "This is fun!" "I'd like more time." "How exciting!" )</i>			

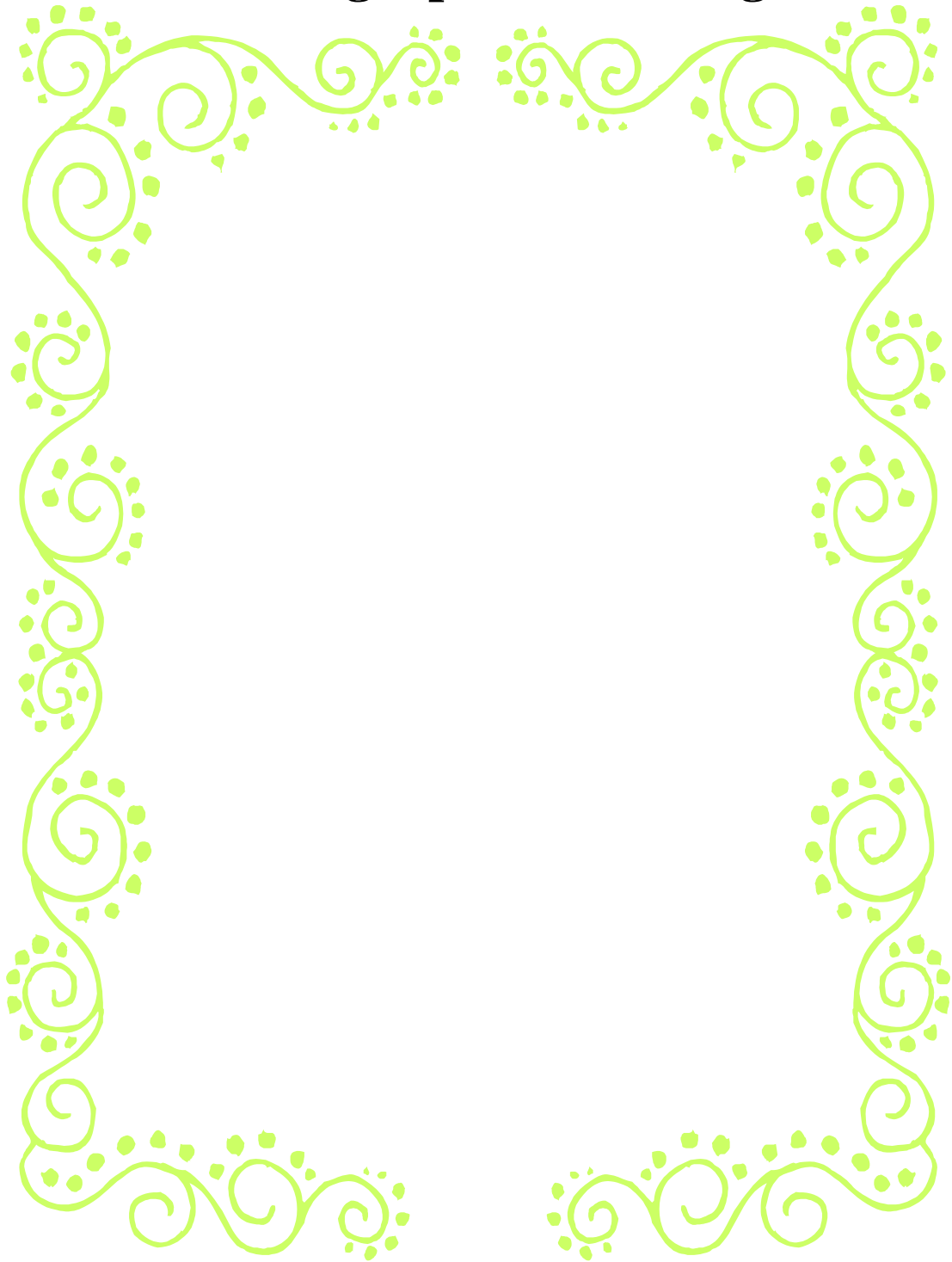


### Lesson 3

Cavin and Hobbes Cartoon Strip (taken from:  
<http://www.progressiveboink.com/archive/calvinhobbes.htm>)



## Creating a poster/montage



# Famous inventors

## Alexander Graham Bell and the telephone(1847-1922)

The telephone dates back to 1667, when English physicist Robert Hooke made a string telephone that carried sounds over a wire pulled tight. Around 1850, Sir Charles Wheatstone of England invented the acoustical phone. A musical box transmitted sounds from the cellar of a house to the second story of the same house using a wooden rod.

In 1854, French inventor Charles Bourseul (1829-1912) invented a telephone operated by electricity. In 1860, German physicist Johann Phillip Reis(1834-1874)also invented an electric phone. The phone could not reproduce speech, however, and Reis gave up after a few tries.

Not until 1876 did Alexander Graham Bell, a man who taught deaf people how to talk, receive a patent for an electric phone. From many experiments, he learned that only a steady electric current could transmit the human voice. The next year, he made the first phone that could transmit the human voice accurately. His phone consisted of a transmitter, a receiver, and a single connecting wire. He demonstrated it at the one-hundredth birthday exhibition of the United States in Philadelphia.

The telephone was an immediate hit. Over the next fifty years, nearly every household in the industrialized world had the new invention installed.

## Luigi Galvani

Luigi Galvani was an Italian Scientist, as well as a medical doctor. In 1786, it was an exciting day for him because, while he was examining a dead frog, he noticed that a spark could make the frog's leg move, when two different kinds of metals were touching the frog's leg. He felt curious to why this happened. He thought that this all happened because the spark traveled from one metal, through the frog's muscle, and then into the other different kind of metal. What he thought it was, was really true because he tried it again. And it really happened. He didn't know this would happen, so he was determined to find out.

When the next lightning storm came, Luigi Galvani used a brass hook to hold the frog's muscle and attached this hook to an iron railing. Then the spark could travel between the brass hook and iron railing to make the muscle move. As the lightning flashed around him, he noticed that the muscle moved again! While there was much excitement about this in his town and country about the discovery of electricity, it was only the beginning of the investigation for scientists all around the world.

Source:[http://www.bhncdsb.edu.on.ca/~notredame\\_b/gr6b/inventors\\_inventions1.htm](http://www.bhncdsb.edu.on.ca/~notredame_b/gr6b/inventors_inventions1.htm)

**What are their character traits?**

*Alexander Graham Bell*



*Luigi Galvani*



# Two Mysteries

- A) The Seagull Sandwich Mystery
- B) The Naked Hitchhiker

## How to play:

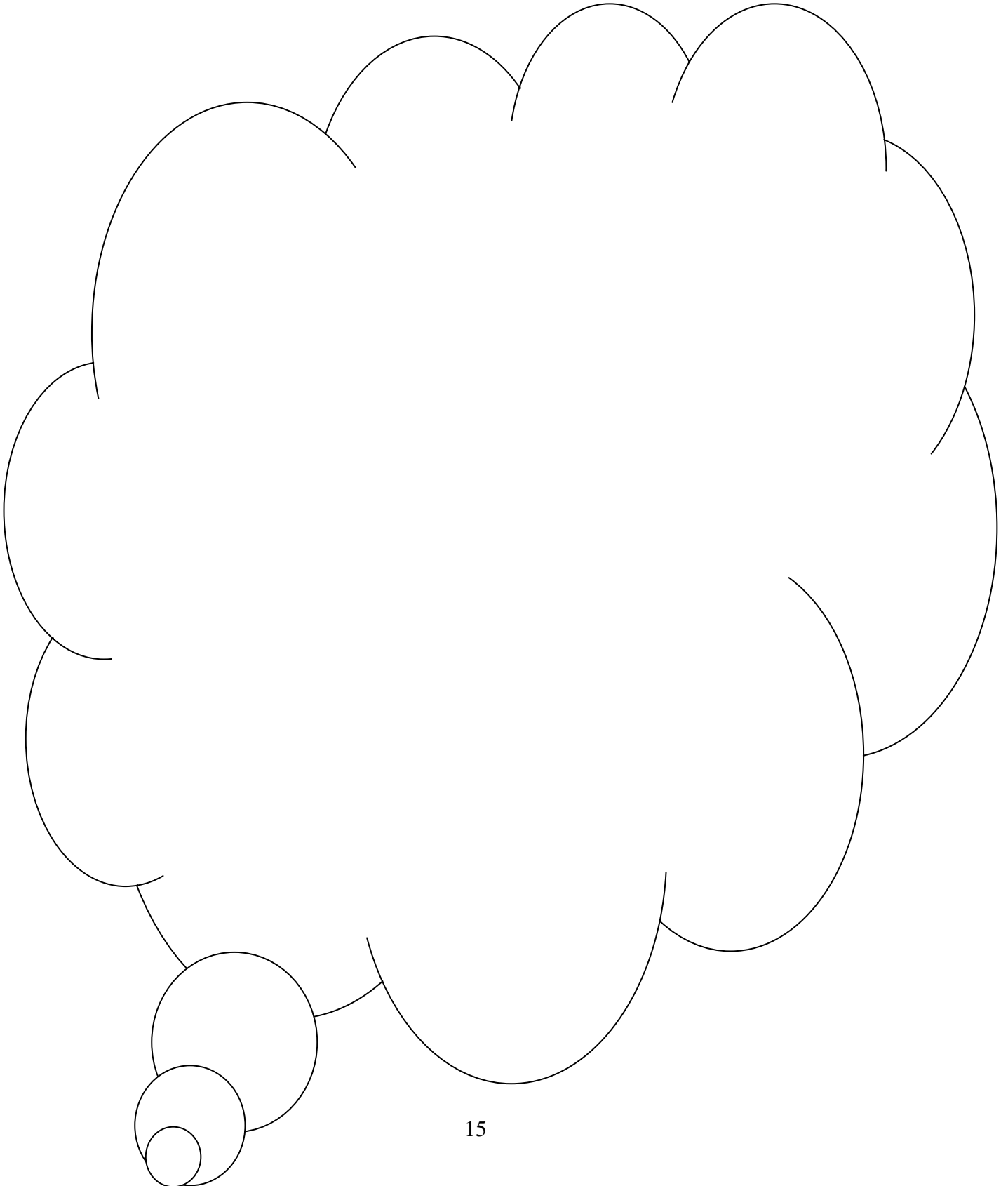
1. The class is divided into groups of 4-5 students.
2. The teacher starts with an introduction of the case story.
3. The group takes turns to ask questions about the case.
4. The first group to solve the mystery wins the game.

## Rules of the game:

1. Each group can only ask 3 questions per turn.
2. The teacher will only reply "Yes" or "No" or "Irrelevant" to questions.



# Reflection Journal



## Rubrics for HOM-Questioning and Posing Problems

<b>Criteria</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Level 4</b>	<b>Level 5</b>
Ability to enquire and seek out information	Student is uninterested and does not enquire and seek out information	Student is a little interested and enquires and seeks out information minimally	Student is interested and enquires and seeks out information	Student is involved and enquires and seeks out information with effort	Student is very involved and enquires and seeks out information passionately
Ability to ask a variety of questions	Student is unable to ask a variety of questions	Student is able to ask simple questions	Student is able to ask various questions	Student is able to ask various questions which demonstrate insight and evaluation	Student is able to ask a wide variety of questions which demonstrate insight, originality and proper evaluation
Ability to pose hypothetical problems	Student is unable to pose hypothetical problems	Student is able to pose hypothetical problems a little	Student is able to pose hypothetical problems	Student is able to pose hypothetical problems consistently	Student is able to pose hypothetical problems very consistently