



Key Skills for Junior Cycle

Managing Information and Thinking

Managing Information and Thinking

Introduction

This key skill helps learners gradually improve their capacity to search for information from different sources. They also develop their skills in judging and discrimination between information types and sources and they develop strategies for organising information so that they can understand it and use it later. This skill also develops learners' thinking skills so that they can become more skilled in higher order reasoning and problem-solving.

Managing Information and thinking

1. Being curious
2. Gathering, recording, organising and evaluating information
3. Thinking creatively and critically
4. Reflecting on and evaluating my learning
5. Using ICT to access, manage and share knowledge

This resource offers some tips and ideas teachers can use to help learners develop skills related to managing information and thinking. No doubt you will find lots of additional ways to develop this skill. You will also notice that it links in with other key skills and with other resources on the NCCA Junior Cycle website.



Pick one element related to managing information and thinking and read through its learning outcomes. Then brainstorm (either alone or with a colleague) this question:

Where do you see opportunities for developing this skill within your current day-to-day teaching?



Movie

Handling mistakes and failure

Part of managing thinking and being creative is the ability to be resilient when we encounter difficulties. Listen as Brian Boyd discusses the importance of perseverance, and how young people can be taught to see failure as a positive aspect of learning:

<http://www.journeytoexcellence.org.uk/videos/expertspeakers/handlingfailurebrianboyd.asp>

Supportive Classrooms

Let's begin by thinking about classroom **cultures**, because establishing the right climate is a crucial factor in encouraging creativity– a climate where pupils feel comfortable about being curious, sharing their thoughts, asking questions and making mistakes. Pupils will be more inclined to ask questions if there is a supportive atmosphere in the classroom.

Characteristics of supportive classrooms

- It's OK to be wrong– we learn from our mistakes.
- Imaginative thinking is appreciated not just for the sake of it but for the purposes of our learning objectives.
- It's good to ask questions, envisage 'what might be' and to challenge assumptions.
- We congratulate each other for making connections and seeing relationships between things.
- We like to explore ideas and not just take them at face value.
- We practise reflecting on our ideas, conclusions and actions.

In this resource you will find suggestions on how you can help learners in:

1. Being curious
2. Gathering, recording, organising, and evaluating information
3. Thinking creatively and critically
4. Reflecting on and evaluating their learning
5. Using ICT to access, manage and share knowledge.

There is also a final section entitled Making it my own which suggests how you, as a teacher, can get started.

This resource is a work in progress and will be expanded to include ideas on additional elements of this key skill.

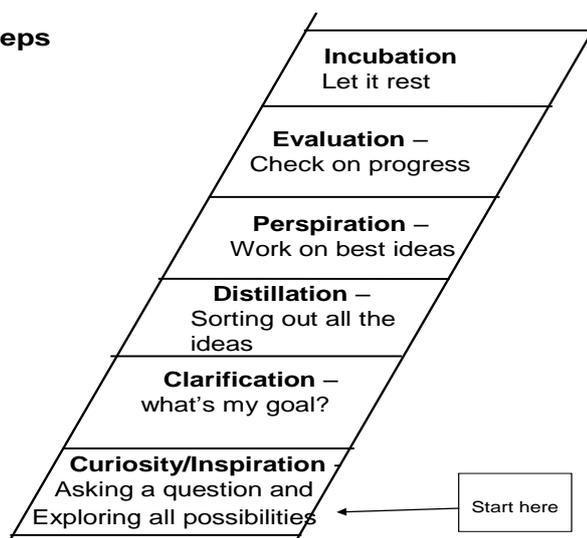
Please send us your ideas too.



Being Curious

The first step in the process of being creative is being curious, as you can see in the steps below.

Creativity – the steps



Getting started with your students - practical classroom ideas

Being able to ask questions and being able to search out different perspectives or ways of approaching a problem is important for creativity. Let's look at some strategies to help your learners in this regard.

Helping your learners to ask questions

At the start of class or a new topic

Briefly, tell learners what the new topic is about and ask them to identify what they already know. Make a note of these points and then ask learners, perhaps working in groups at first, to generate a number of questions about the topic that they would like to explore further. Then, at the end of teaching the topic, they can check back to see how many of their questions were answered.

Alternatively, ask the learners to write down: *'The thing I'm most curious to learn about this topic is...'* or *'The question I'm most interested in answering is...'*

At the end of class or a topic

At the end of studying a topic, instead of giving learners questions to answer that will check their understanding, ask the learners to come up with a set of questions and then to question each other in small groups.



Helping your learners consider different perspectives

Walking Debate

1. Make 2 signs. Write the word 'AGREE' on one and 'DISAGREE' on the other and stick them on opposite walls.
2. Invite the learners to gather in the middle of the room. Read out a statement (which will stimulate debate) and ask learners to decide if they agree or disagree with the statement.
3. Learners then move to the position they are happy with, which can range from strongly agree to strongly disagree, or if unsure then they will stand in the middle. Without talking to one another, ask learners standing in different places to explain why they have chosen to stand in that position. Probe questions can help tease out their reasons and can also challenge them to rethink their position.
4. Offer learners the chance to adjust their position after some opinions have been given.
5. Continue reading out more statements and, each time, ask learners to position themselves along the spectrum of AGREE to DISAGREE. With practice, learners can begin to see the shades of grey that exist in relation to all topics. They should also learn that it's okay to change position after informed discussion.

The power of persuasion

Another strategy to get the thinking going is to get the class to generate four possible answers to a question and to ask the learners to vote on their preferred answer. Count the votes for each answer. Ask the learners to sit with their preferred answer groups. Now the job of each group is to persuade others from different answer groups to come over to their group. Give them some time to formulate their campaign strategy. Depending on the age of the class, the following questions may be useful to prompt debate:

- Who is going to speak? What argument will you use?

- Are you going to have a campaign slogan?
- Which other group will you target?
- Will you focus on the strengths of your own argument, or on the weakness of the opposition?

During the 'campaign' the teacher acts as chairperson, although this role may also be assigned, especially as the class becomes familiar with the strategy. In the course of the lesson, learners may change sides or revert to original positions. Leave enough time at the end of the lesson to think about the campaign and the tactics used. A good follow-up homework task for further learning is for learners to generate a paragraph or a statement beginning with: *I was persuaded because...*, or, *Answer A won because...*

Some question prompts to help your learners consider different perspectives

- You seem to be approaching this issue from the perspective of... Why have you chosen this perspective?
- Can you imagine an alternative way of seeing this issue? What would it be like?
- What would someone who disagrees say?
- Can/did anyone see this in another way?
- How would other groups/types of people respond? Why? What would influence them?
- How are x and y's ideas alike? How are they different?

Academic controversy

This is a cooperative learning method with a very high effect size. This method is used for a topic where there are two points of view, e.g. Do prisons work? Should the cloning of human life be allowed? Was Ireland 'neutral' during World War 2?

1. Learners are allocated one of the points of view. They research and prepare their arguments to support that viewpoint.
2. Learners are arranged in pairs with opposing points of view, or put in groups of four containing two learners with each point of view. Each side presents their position in as persuasive a manner as possible.
3. Learners engage in discussion and argue their position.
4. Learners swap positions and present each other's position as accurately, completely and persuasively as they can. It is best to tell learners this is coming up so that they will listen carefully to the opposing view!

Debating from different perspectives

When an issue is being debated, assign learners the perspective from which they must debate the issue. For example, in a debate about the current legal age for the consumption of alcohol, ask groups of learners to consider the issue from the perspective of parents, teachers, young people, gardai, publicans, off–license owners, young offenders, youth health services.



Movie

Watch this video entitled 'Communicating skills through debate' to see Kilkenny learners coming to appreciate different perspectives through debate and academic controversy:

<http://oldaction.ncca.ie/index.cfm?objectid=3A6AE1C7-0502-BB77-F9F26D4E8522CD5B>

Get In character

- Write a set of questions on the board.
- As learners come into class, hand them character cards (such as businessman, learner, politician or characters from a novel or from history).
- Ask them to answer the questions in character.

In the HOT seat

You may be familiar with the strategy of putting a learner in a HOT seat taking the role of a character from fiction or from history, or of a person from another part of the world or facing a particular challenge. The class must think of questions to ask the character and the occupant of the HOT seat answers the questions from the character's perspective. For younger learners, it is best if the teacher models being the person in the HOT seat until the class is familiar with how it works.

There are a few variations on this, such as preparing questions in advance, organising a panel discussion with the several guests in the HOT seat or seats. All of these work to get the learners questioning and thinking from different perspectives.

Creating alternative answers

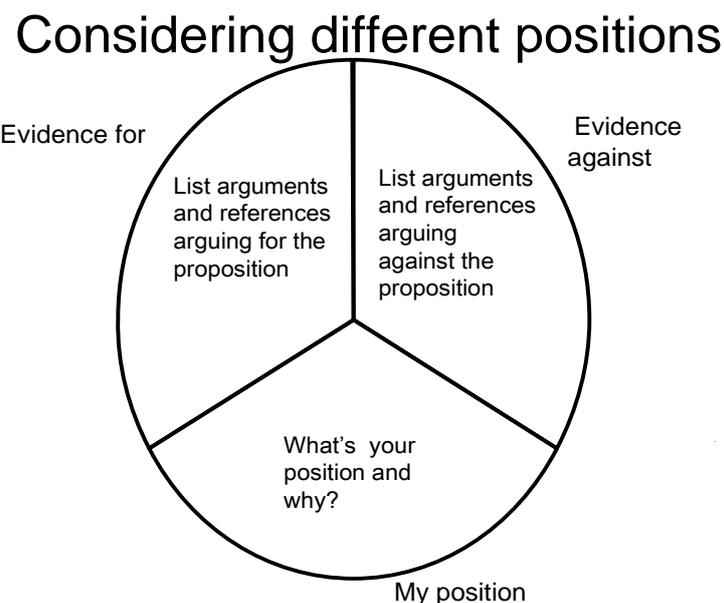
This methodology can be used to enable learners to generate and extend ideas, to become more flexible in their thinking and to look for alternative answers rather than just settling for the first answer that comes up.

Materials needed: Copy of a text with a set of questions and a set of role cards per group.

1. Assign learners to groups (3 or 4) with roles as follows:
 - Reader – Reads the text aloud to the group
 - Checker for understanding – Reads the questions to make sure that all group members understand how to answer each question
 - Recorder – Records 3 or more good answers to each question and circles the one the group likes best. Makes sure that the group members agree with the one that is circled.
 - Reporter - Reports back on behalf of the group to the class.
2. Explain the task – each group is to read the text, create at least 3 good answers to each question and then agree the best one.
3. When the groups are finished they can compare answers with a nearby group, or the teacher can take feedback from the Reporter or ask random learners from each group to explain their group's answers.

(Adapted from Johnson, Johnson & Holubec, *Advanced Cooperative Learning*, p. 13:20)

Graphic organisers can be used to help learners set out different positions such as...



Gathering, recording, organising and evaluating information



Discuss with a colleague, what are the advantages of students learning how to make their own notes, as opposed to the teacher providing notes?

ideas

ideas

Helping your learners to make their own notes

Clearly written, accurate notes help learners to summarise and make sense of information for later study and review. Making notes can also help to keep learners focused during class time. However good note-making is a skill that takes time and practice to develop.

Teaching the skill of note-making

- Begin with 1st years by helping learners to pick out and highlight the main ideas in a text. Highlighting is better than underlining as it forces learners to decide what's really important.
- Ask learners to summarise the key ideas in their own words.
- Pair them up so they can check with a partner to see if all the key ideas have been captured.
- When learners are learning how to make notes it can also be useful to have some examples made by other learners, which they can look at to see what they are aiming for.
- Until learners become more skilled in note-making it is helpful if the teacher wraps up a note-making session by checking that all learners have noted the main points of information. This can be done quickly on the board.

Making notes—some tips for learners

- Keep your notes neat and organised.
- Begin each note-making session on a fresh page, with the date and topic.
- Do not write down everything—just the important facts and key ideas.
- Use different coloured pens or highlighters to mark different points/topics.

Sample Graphic Organisers

- | | | | |
|--|-----------------|---|----------------------------|
| 1.  | Ranking Ladder | 8.  | Cross Classification Chart |
| 2.  | Step | 9.  | Two Venn Diagram |
| 3.  | Chain of Events | 10.  | Three Venn Diagram |
| 4.  | Sequence Charts | 11.  | Four Corner Organiser |
| 5.  | Funnel | 12.  | Starburst |
| 6.  | Fishbone | 13.  | Tri Pie |
| 7.  | Brain drops | 14.  | Research Grid |

These links will provide useful templates and ideas on how you can use graphic organisers:

http://generic.slss.ie/resource_category/view/65

http://www.educationoasis.com/curriculum/graphic_organizers

<http://www.teachervision.fen.com/graphic-organizers/printable/6293.html?&detoured=1>

Mind Mapping

A mind map differs from a graphic organiser in that learners create it themselves. The teacher needs to model the process but every learner must create their own mind map. It is a personal learning document. No one can map another person's mind!

A mind map is a useful way to help learners come up with new ideas or make sense of complex topics or see how pieces of information fit together. This can also be a useful technique to improve the way your learners take notes. More than this, mind maps encourage creative thinking and they hold information in a format that learners find easy to remember and quick to review. They are more compact than conventional notes, often taking up one page.

Popularised by Tony Buzan, mind maps abandon the list format of conventional note-taking. A good map shows the 'shape' of the subject, the relative importance of individual points,

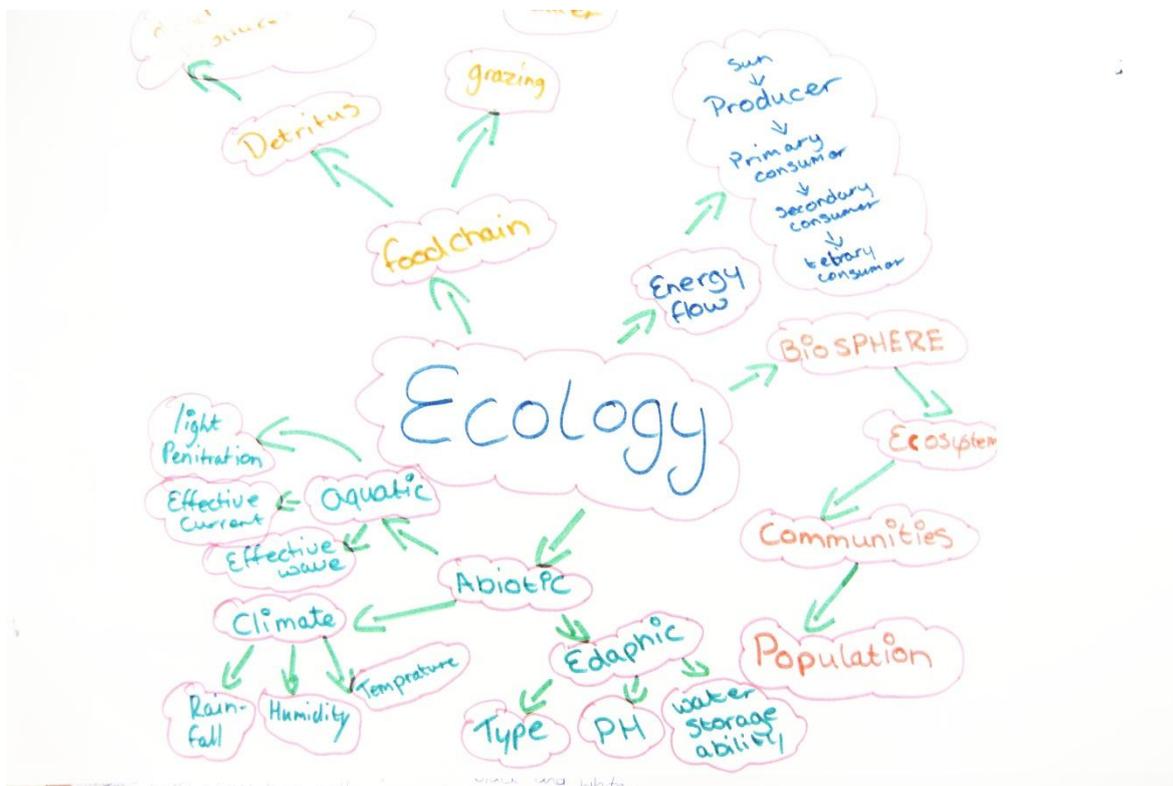
and the way in which facts relate to one another. As such, they help learners to connect information.

To make notes on a subject using a mind map, draw it in the following way:

1. Write the title of the subject you're exploring in the centre of the page, and draw a circle around it.
2. As you come across major ideas or subheadings of the topic (or important facts that relate to the subject) draw lines out from this circle. These can be drawn with a different colour.
3. As you "burrow" into the subject and uncover another level of information (further subheadings, or individual facts) belonging to the subheadings above, draw out further lines linked to the subheading lines.
4. Finally, for individual facts or ideas, draw lines out from the appropriate heading line and label them.

A complete mind map may have main topic lines radiating in all directions from the centre. Sub-topics and facts will branch off these, like branches and twigs from the trunk of a tree. The above information is adapted from www.MindTools.com.

While drawing mind maps by hand works well, software tools like [MindGenius](http://www.MindGenius) and <http://www.imindmap.com> are also useful tools.



Sample mind map on Ecology



Mind mapping

Watch this short youtube video on mind mapping:

<http://www.youtube.com/watch?feature=fvwrel&NR=1&v=wLWV0XN7K1g>

Movie

Picture it

Asking learners to represent information in the form of a picture or poster can be very useful.

In English class, learners might create a picture to show the imagery in poetry, the key moments in a story, and so on. In other subjects such as CSPE, Science or Geography, learners might take digital pictures to represent key concepts and to share them with the class.

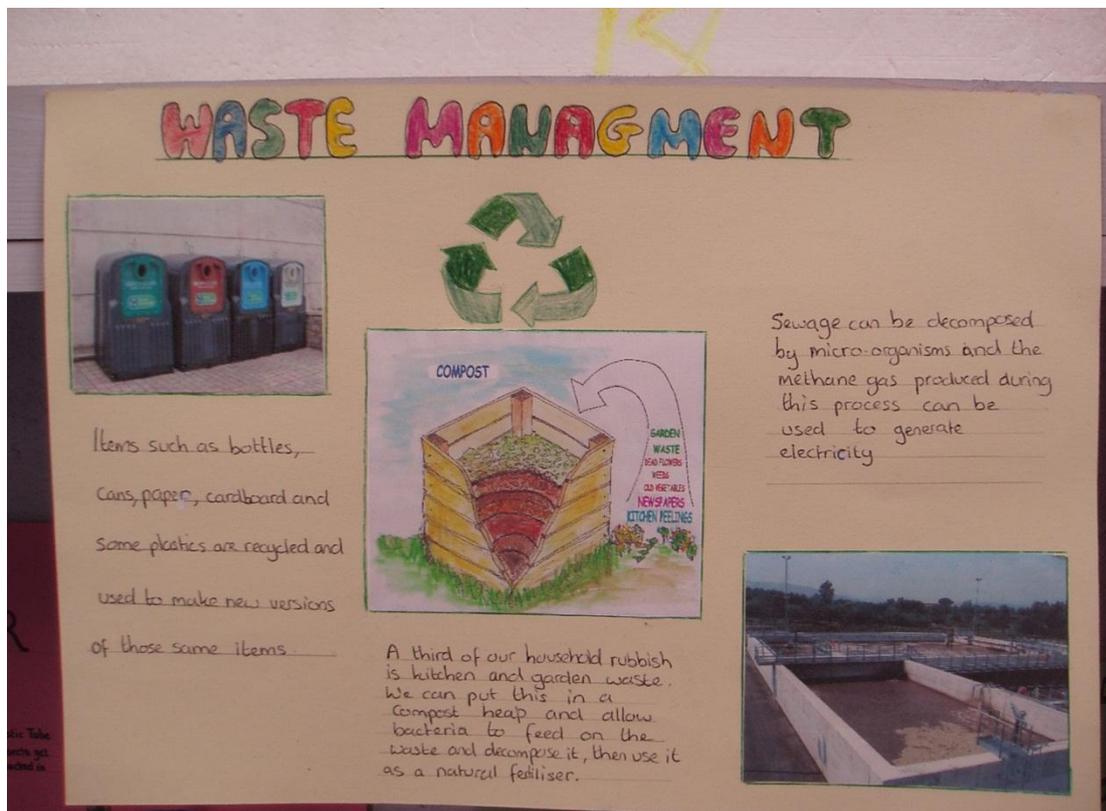


Fig 2: Learners were asked to represent information on a poster



Scanning and Skimming – Fast reading techniques

Fast reading techniques are useful when learners need to browse text and extract the key points in a short time.

Skimming – handy when you're looking for particular things within a text, or trying to find out whether a text will be useful.

Scanning – a useful first step before reading more deeply.

How is 'skimming' different to 'scanning'?

The term skimming is often confused with scanning. Remember:

Skimming is used to obtain the gist (the overall sense) of a piece of text. Skimming is 3-4 times faster than normal reading.

e.g. You would use skimming to get the gist of the ideas in an article.

Scanning is used to obtain specific information from a piece of text.

e.g. You would use scanning to find a particular number in a telephone directory or a date or name in a history book.

Sometimes you can use **both** reading methods. After you have skimmed a piece of text to decide whether the text is of interest, you may wish to use scanning techniques to locate specific information.

Skimming	Scanning
Read quickly to get an overview before in-depth reading.	Locate specific information to give an overview of a text
Run your eyes down the page to <ul style="list-style-type: none"> • spot new words or concepts so you can check the meaning before you start reading. • read the first and last paragraphs to get the main points. • look at the first sentence of each paragraph to get a feel for the content. • check to see if there's a summary where you can note the key points. 	Look for information which tells you <ul style="list-style-type: none"> • what it's called • what it's about • will this be useful to me? <p>This overview will help you decide whether you should read further, and how useful the document might be for your study.</p>



Student Activity

Brainstorm examples of when we might use scanning (e.g. looking up a phone number, finding a word in a dictionary, looking for specific information on a website, checking the football results in the newspaper, checking the starting time of a TV programme, etc.).

Brainstorm examples of when we might use skimming (e.g. when you read a magazine and you are not interested in reading it word by word but skim to get the main stories).

To practise scanning

1. Circulate a set of questions related to a topic currently of relevance to the learners.
2. Remind your learners that scanning means reading very fast to find specific pieces of information.
3. Explain that you will be showing a series of paragraphs on Powerpoint slides. The paragraphs contain the answers to the questions which have been circulated.
4. Learners have 3 minutes to read all the slides, which will be moving quite rapidly.

Their task is to scan the text and locate all the answers to the questions. When the first slide appears the clock starts ticking.

To practise skimming

1. Remind learners that skimming means reading very fast to find only the main ideas of a text.
2. Circulate an article or a chapter from a text (containing at least 5-6 solid paragraphs). Learners will have a short time to skim read the text and in doing so they must identify the main idea in each paragraph.
3. At the end of the agreed time (say 3 minutes) learners must turn to each other and take turns summarising the key ideas in each paragraph. The first learner says what was the main idea in paragraph one, the second learner says what was the main idea in paragraph two, then the first learner takes paragraph three, and so on until they have completed the text.



Helping learners to evaluate the quality and source of information

When learners are using the internet encourage them to think like a judge!

- Examine the evidence.
- Ask questions.
- Consider the motives of people providing information.
- Trust no one until you have found good cause to do so.

Use the WWW technique! WHO, WHAT, WHEN

1. Who?

Can you trust the source of the information?

- Who has written the information?
- What is the author's level of expertise in the field?
- Why have they written it - what are their motives?
- Are they a useful source for your research?

Tip

If you are unsure about the author from the site itself, try a library or web search to find a list of previous publications, a CV or web page about them.

2. What?

Can you trust the information? This decision requires some critical thinking.

There are some key criteria to bear in mind when evaluating the content of information:

- **Relevancy** - does the information help to answer your questions?
- **Validity** - are the arguments rational and logical, and supported by evidence? Can you differentiate fact from opinion?
- **Accuracy** - are the arguments well-reasoned, and is supporting evidence relevant and correct?
- **Bias** - What perspective is the author coming from? Are they giving both sides of the story? Or are they arguing from a particular position or with a particular motivation that might skew their writing? Do you need to find counter-arguments that give an alternative point of view?
- **Evidence** - what examples are given to support the arguments? Is all the evidence referenced with a source that you can check for verification?

3. When?

The accuracy of your source may be affected by the date it on which it was published.

Tip: Look for a publication date on the title or home page, or last updated dates in the header or footer. **Example** If you were looking for a textbook or website about the impact of climate change, would you want information from five years ago, or from this year?

Criteria and questions that teachers and learners may use to evaluate websites include:

Source	Is the website hosted by a reputable source? Is there a header or footer showing who has developed the website?
Content	Does the website present accurate information? Is the language level suitable? Is the information presented in multiple formats? (Text, audio, graphics)?
Up to date	What is the website publication date? When was the information last updated? Is it still current, or outdated?
Authorship	Who has written the information? Has the author provided his/her contact information?
Bias/intention	Is the information presented unbiased? Can you distinguish facts from opinion?
Site design	Is the site well designed? Is it easy to find information on it?

Adapted from *Information and Communication Technology in the Primary School Curriculum – Guidelines for Teachers*, page 110

Thinking creatively and critically

'Imagination is more important than knowledge.' Albert Einstein

Discuss: What do we understand by the term 'creativity'?



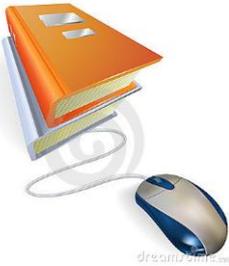
First, the characteristics of creativity always involve thinking or behaving **imaginatively**.

Second, this imaginative activity is **purposeful**: that is, it is directed to achieving an objective.

Third, these processes must generate something **original**.

Fourth, the outcome must be of **value** in relation to the objective.

Discuss the characteristics suggested by this definition. What would you add?



If you would like to read a summary of what the research has to say about creativity in learning follow this link

<http://www.journeytoexcellence.org.uk/resourcesandcpd/research/summaries/rsfosteringcreativity.asp>

Other useful websites:

www.ltscotland.org.uk/creativity

<http://www.edwdebono.com/>

www.buildinglearningpower.co.uk

www.learningunlimited.co.uk

The main messages about creativity in learning

- Creativity is about generating ideas or producing things and transforming them into something of value. It often involves being inventive, ingenious, innovative and imaginative.
- Most individuals believe they are not very creative. However, creativity is not just about special people doing special things. We all have the potential to be creative and creativity is a skill that needs to be developed.
- Creativity embraces both hard and soft thinking. The most powerful creative thinking occurs when the left and right hemispheres of the brain combine to act as both 'artist' and 'judge'.
- The forming of collaborative, creative groups and partnerships helps to foster creativity.

Creative pupils are curious, question and challenge, and don't always follow rules. They

- ask 'why?' 'how?' 'what if?'
- ask unusual questions.
- respond to ideas, questions, tasks or problems in a surprising way.
- challenge conventions and their own and others' assumptions.
- think independently.

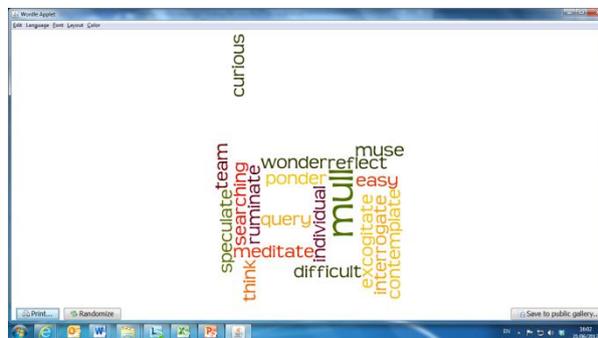


Here's one way you can stimulate thinking and curiosity as well as making connections between new and prior knowledge.

Follow the link below to find an online tool that allows you to create a stimulus to raise learners' curiosity about a new topic. Just paste in single words associated with the topic and the tool will create a word cloud. Use the word cloud to provide key words, expand the learners' vocabulary to discuss the topic and to activate prior knowledge or understanding.

www.wordle.net

Use stimulating starting points such as artefacts, problems, stories with human interest or topical events .



In this example from Wordle the topic is Questioning

Find this and other ideas in the National Behaviour Support Service resource:
Activating Prior Knowledge: Previewing and Reviewing Lesson Ideas.



As a subject department, work out a variety of ways in which you could stimulate learners' curiosity in your subject area.

Questioning

*'What's in a question, you ask? Everything.
It is a way of evoking stimulating response or stultifying inquiry.
It is, in essence, the very core of teaching.'*

John Dewey, 1933



Do you agree with Dewey, that questions are the very core of teaching?
What kinds of questioning techniques do you use in the classroom?
What sort of questions do you want your learners asking?

Effective questioning

If we want young people to become creative and critical thinkers we need to encourage them to develop higher-order thinking skills. One way to do this is to ask them HOT questions, which require them to think about the answer. HOT stands for Higher-Order Thinking. By using HOT questions learners get to generate the 'heat' (i.e. the real learning), while teachers simply generate the 'light' (with a good HOT question or two!).

Closed, lower-order thinking (LOT) questions are useful when you need to check for understanding during explanations or recap sessions. A downside of using quick fire LOT questions and the ping-pong approach is that learners have no time to put an answer together. Many learners know that someone else (and they usually know who) will answer and they just move into a spectator role.

Questioning - Common pitfalls and possible solutions

Not being clear about why you are asking the question: Don't ask questions just for the sake of it. Plan your questions well in advance. How about just asking one good question during class that will get learners really thinking?

Asking too many closed questions that need only a short answer: It helps if you plan open questions in advance.

Asking too many questions at once: Asking about a complex issue can often lead to complex questions. If you ask a series of questions then learners may find it difficult to understand what is required and they become confused. You need to tease out the issues

for yourself first and focus each question on one idea only. It also helps to use direct, concrete language and as few words as possible. Allow learners the time to absorb the information, to think before responding.

Asking difficult questions without building up to them: This happens when there isn't a planned sequence of questions of increasing difficulty. Sequencing questions is necessary to help learners to move to the higher levels of thinking.

Asking a question then answering it yourself: What's the point? This pitfall is often linked to another problem - not giving learners time to think before they answer. Build in 'wait time' to give learners a chance to respond. You could say 'Think about your answer for 3 seconds, then I will ask for an answer.' Think-pair-share activities can help also.

Asking bogus 'guess what's in my head' questions: Sometimes teachers ask an open question but expect a closed response. If you have a very clear idea of the response you want, it is probably better to tell learners by explaining it to them rather than trying to get there through this kind of questioning. Remember, if you ask open questions you must expect to get a range of answers.

Dealing ineffectively with wrong answers or misconceptions: Teachers sometimes worry that they risk damaging learners' self-esteem by correcting them. There are ways of handling this positively, such as providing prompts and scaffolds to help learners correct their mistakes. It is important that you correct errors sensitively or, better still, get other learners to correct them.

Not treating learners' answers seriously: Sometimes teachers simply ignore answers that are a bit off-beam. Instead you could ask learners why they have given that answer, how they arrived at that conclusion or if there is anything they would like to add. You could also ask other learners to extend the answer.

Asking questions of the same learners: Without meaning to, we can find that we constantly direct questions to the same learners (often the ones we know will provide us with the answers!). Having names of all learners on lollipop sticks in a jar and plucking out sticks at random can overcome this hurdle.

Variation - Asking questions that are too difficult for less able learners: Colour-coding the lollipop sticks, so that you can choose who to ask lower order questions of and who to ask higher order ones of, can also reduce humiliation and raise self-esteem for the less able learners.



Classroom strategies for effective questioning

Creating a climate where learners can learn from mistakes: This is very important if learners are going to build the confidence to speculate and take risks. It is important that learners' contributions are listened to and taken seriously by both the teacher and the class. You can model this by ensuring that you make appropriate responses to contributions and are not critical. It is also important that you do not allow the class to ridicule wrong answers. You could also model making mistakes yourself to show that being wrong is acceptable. It is important to create a climate where the learner feels safe to make mistakes and to learn from them. A good habit to encourage this is to allow the learners to discuss answers with their neighbour or in groups – the think-pair-share approach.

Giving 'wait time': We have all had that eureka moment when we have figured something out for ourselves... but as teachers do we deny some learners that moment by asking for an immediate answer or by rephrasing the question too quickly (anything but silence!), or by giving the answer before the learners have a chance to give an attempt at an answer? Giving sufficient time for learners to formulate an attempt at an answer is very important. How about giving your learners an extra ten seconds to come up with an answer themselves? This can be the difference between learners learning or not.

The 'no hands rule': We all have been at talks where the facilitator asks a question and we squirm in our seats until an eager person puts up their hand and we can relax. The same is true of our learners. They tend to stop thinking when a few in the class put up their hands. If we use the 'no hands' rule, we encourage all learners to think about the answer to the question as the teacher can choose anyone to answer.

Consider using these kinds of questions

Questions that require learners to use their imaginations

What would happen if ...?

Is there another way of doing this?

Imagine... Suppose...

What are some possible consequences...?

What if you were... Imagine yourself as...

Questions that probe assumptions

What are you assuming?

What is Jenny assuming?

What could we assume instead?

You seem to be assuming _____. Do I understand you correctly?

All of your reasoning depends on the idea that _____.

Why have you based your reasoning on _____ instead of _____?

Why would someone make that assumption?

Questions that probe reasons and evidence

What would be an example?

How do you know?

Why do you think that is true?

Do you have any evidence for that?

What are your reasons for saying that?

What other information do you need?

Could you explain your reasons to us?

Are these reasons adequate?

Why do you say that?

What led you to that belief?

What would change your mind?

But, is that good evidence for that belief?

Is there a reason to doubt that evidence?

What would you say to someone who said that _____?

Can someone else give evidence to support that view?

By what reasoning did you come to that conclusion?

Questions about viewpoints or perspectives

You seem to be approaching this issue from _____ perspective.

Why have you chosen this rather than that perspective?

How would other groups/types of people respond? Why? What would influence them?

Can/did anyone see this in another way?

What would someone who disagrees say?

What is an alternative?

How are Ken's and Joanne's ideas alike? How are they different?

Questions about implications and consequences

What are you implying by that?

When you say _____, are you implying _____?

But, if that happened, what else would happen as a result? Why?

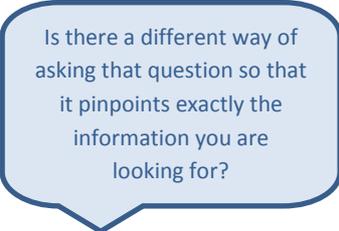
What effect would that have?

Would that necessarily happen or only possibly/probably happen?

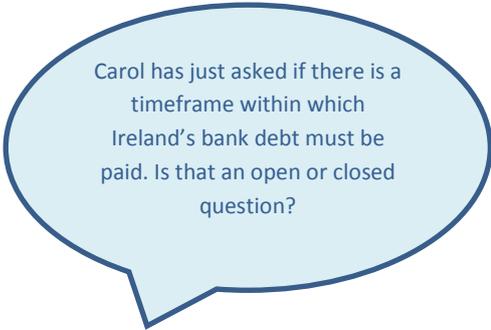
If we say that _____ is ethical, how about _____?

Teaching learners the language of questioning

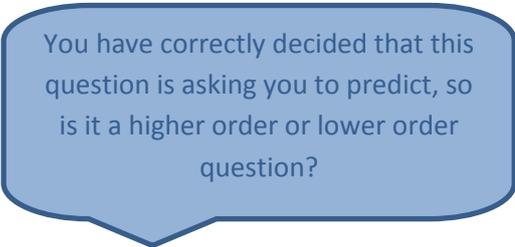
Students need support to practise and reflect upon their own questioning techniques. They need to be able to identify different types of questions that may be framed to obtain a more comprehensive response. Teachers can formally teach the art of questioning by asking different types of questions. Drawing attention to the ways in which questions are different (open, closed, easier, more complex, vague, more specific) and providing opportunities for regular practice will improve learners' skills and confidence in this area.



Is there a different way of asking that question so that it pinpoints exactly the information you are looking for?



Carol has just asked if there is a timeframe within which Ireland's bank debt must be paid. Is that an open or closed question?



You have correctly decided that this question is asking you to predict, so is it a higher order or lower order question?

Bookmark Copy this page onto card and cut it out to make a bookmark. Bring it to class to help you to vary your questioning approaches. (Adapted from Bloom's Taxonomy.)

Knowledge

Who, what, why, where, when, which?
Describe or define
Can you find?
Recall, select, list
How did ... happen?
What were the main?
Label, select

Comprehension

Describe in your own words
Summarise what you have learned
Classify, categorise the facts to show
What is the main idea of?
Interpret in your own words
Compare and contrast
Can you explain what is happening?

Application

What examples can you find to?
What facts show that?
How would you organise ... to show?
What would happen if?
How could you use what we have learned?

Analysis

Why do you think?
What conclusions can you draw from?
What would you infer from?
What is the relationship between?
Can you make a distinction between?
Examine closely and explain how did?

Synthesis

How would you improve/solve?
Can you propose an alternative?
How could you adapt/modify?
How could you test?
What would happen if?
Can you predict?
What solutions would you suggest?

Evaluating understanding

What do you think about?
What would you prioritise?
What do you think is the most important?
Why do you think ... is not/is important?
What would you recommend?
How could you solve/improve?
How could you determine?

More ideas to stimulate critical and creative thinking



Discuss with your colleagues

What are the characteristics of critical thinking? Look at the list below and see if you agree/disagree or would want to add anything?

How could you provide opportunities for promoting learners' critical thinking in a planned lesson or activity?

Key features of critical thinking

- We are interested in thinking about our thinking and in practising critical thinking.
- We are prepared to challenge our own beliefs and assumptions.
- We understand that explanations should be testable.
- We don't reject ideas for the sake of being negative but we suspend judgement until we can justify claims being made.
- We understand that reason plays an intrinsic role in our decisions and judgements.
- We are aware of the need to be respectful of others' thinking and beliefs.



Look at this 5 minute Youtube video to gain a quick understanding of critical thinking:

<http://www.youtube.com/watch?v=6OLPL5p0fMg&feature=fvwrel>

Movie



To help learners think critically they need to be able to read actively and analytically. Read a short piece on how one teacher approaches this in her classroom:

<http://www.accessexcellence.org/LC/TL/buchanan/actively.php>

A critical thinking checklist

These prompts could be used to promote critical questioning in your class

- √ **CLARITY:** Could you elaborate further on that point? Could you express that point in another way? Could you give me an illustration? Could you give me an example?
Clarity is the gateway standard. If a statement is unclear, we cannot determine whether it is accurate or relevant. In fact, we cannot tell anything about it because we don't yet know what it is saying.
- √ **ACCURACY:** Is that really true? How could we check that? How could we find out if that is true?
A statement can be clear but not accurate, as in "Most dogs are over 136 KG in weight."
- √ **PRECISION:** Could you give more details? Could you be more specific?
A statement can be both clear and accurate, but not precise, as in "Jack is overweight." (We don't know how overweight Jack is, 1kg or 200 kg)
- √ **RELEVANCE:** How is that connected to the question? How does that relate to the issue? A statement can be clear, accurate, and precise, but not relevant to the question at issue.
- √ **DEPTH:** How does your answer address the complexities in the question? How are you taking into account the problems in the question? Is that dealing with the most significant factors? A statement can be clear, accurate, precise, and relevant, but superficial (that is, lack depth).
For example, the statement "Just say No" which is often used to discourage children and teens from using drugs, is clear, accurate, precise, and relevant. Nevertheless, it lacks depth because it treats an extremely complex issue, the pervasive problem of drug use among young people, superficially. It fails to deal with the complexities of the issue.
- √ **BREADTH:** Do we need to consider another point of view? Is there another way to look at this question? What would this look like from a conservative standpoint? What would this look like from the point of view of...?
A line of reasoning may be clear accurate, precise, relevant, and deep, but lack breadth
- √ **LOGIC:** Does this really make sense? Does that follow from what you said? How does that follow? But before you implied this and now you are saying that; how can both be true?

The Teachers' Role

1. Pose a problem to be solved or a question to be answered in relation to a topic – How does place influence the spread of disease? Should water resources be used for salmon or potatoes?
2. Ask learners to identify what they already know about the topic.
3. Learners generate hypotheses.
4. Information gaps are identified.
5. Using a variety of resources learners are asked to acquire new knowledge that will help inform the problem-solving process or find the answer to the question.
6. Learners apply new knowledge.
7. At the completion of the task, learners reflect on the new knowledge acquired and also on the ways in which their own thinking evolved during the process (e.g. what made me change my mind about...? What were the flaws in our thinking that were leading us in the wrong direction initially?)

Brainstorming

Brainstorming is a technique which involves generating a list of ideas in a creative, unstructured manner. The goal of brainstorming is to generate as many ideas as possible in a short period of time. The key tool is “piggybacking,” or using one idea to stimulate other ideas. During the brainstorming process, ALL ideas are recorded, and no idea is disregarded or criticised. After a long list of ideas is generated, these can be prioritised as most/least important, most/least helpful, most/least unusual/creative, plus/minus, etc. They can also be ranked 1-5 in order of importance or in the order in which they might be useful in planning an essay.

Carousel brainstorming is another useful technique.

1. The class is arranged into small groups. Each group has a different colour marker.
2. The teacher poses a question on a flip chart.
3. The flipchart question is passed from group to group. (To speed up the process you may have a number of pages going around).
4. Each group must add two original suggestions.
5. The flipchart page(s) are displayed for all to see.
6. You can see which group has suggested each idea (by colour) and ask them more about their idea.



Websites and further reading

Creativity; find it, promote it. QCA 2003

Creativity in Education & Learning Copely, Arthur J.2001

Learning: creative approaches that raise standards, Ofsted, Jan 2012

www.criticalthinking.org

www.bsu.edu/web/latracey/PBL/criticalthink.htm

Reflecting on and evaluating learners' learning



Getting started with your students - practical classroom ideas



Journaling

Invite learners to keep a learning journal or write a blog about themselves and their learning with some prompt questions guided by the teacher. This can help them to identify learning goals, record evidence of success and reflect on their learning needs.

Some useful prompts

This week

I learned...

I was surprised by...

I was interested in...

What I liked most was...

What I found difficult was....

When I needed help I got help from

Something I did well...

The thing I'd most like to improve is ...

My target for next week is...



Use this link to download a simple but effective **reflection tool** to help your learners reflect on what, and how, they are learning: http://action.ncca.ie/media/1242/learner_reflection.pdf

These reflections can also provide you with important feedback.

Some useful techniques which take just a few minutes at the end of class

Turn to a partner and take turns sharing – ‘*The thing I learned today is...*’

and/or ‘*the skill I developed today is...*’

One minute reflection – *Something I learned, a question I still have, something I’m not sure about.*

Complete three sentences (preferably in the learning journal) – ‘*What was good about this class, what didn’t go well, what are my own thoughts on how I’m learning?*’

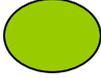
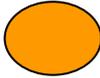
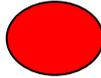
A variation of this could be to use a simple worksheet at the end of class, such as the following...

One thing I learned today ...	I enjoyed ...
I found it difficult to ...	I might have learned better if ...
In my next class I aim to...	

Traffic lighting

Another simple and effective idea is for learners to use traffic light markers to label their work, green orange or red according to whether they think they have good, partial or little understanding of a topic. Learners can then recognise the areas of learning where they need

to concentrate their efforts or where they may need help. In some cases, learners can be grouped so that learners who have a green light beside a topic can help learners with an orange or red light by peer teaching that topic or explaining the problem.

Traffic light learning log				
Date:	Insert subject:	Good understanding	Some understanding	Very little understanding
Topics	List the main topics studied during the past week/month under each subject and decide how well you understand each topic by ticking a light			

Having a conversation about learning with your learners

Some useful questions

- What's going well? And not so well?
- Have you noticed what helps your learning and what blocks it or makes it difficult?
- Are you noticing any patterns in your learning?
- What will your next steps be?
- What do you need to help you?
- What would a teacher need to know about you to help you learn better?





Reviewing their own progress

Why not try some of these strategies?

- At the end of class – Ask learners to give a one minute summary of what they have learned.
- Learners take turns teaching different topics that have been studied in class.
- In small groups, learners take turns teaching different topics that have been studied in class. One person in each group acts as the ‘teacher’ while the others act as questioners. Roles can be swapped around for different topics so that everyone gets a chance to be the teacher.
- Table Quiz – Learners work in groups to develop questions on different topics which can be used in a table quiz to assess learning.
- Play 20 Questions – In small groups learners have to question each other on a topic.
- Ask learners to peer explain a topic in pairs or small groups. This is a good way of checking learners’ understanding.
- Play Team Games Tournament (developed by Barrie Bennett)
http://www.instructionalleadership.ie/Co-operative_Learning.aspx

Peer Teaching



Movie

In order to teach something we have to understand it well. We also remember 90% of what we teach or explain to someone else. Watch this short video to hear Irish learners talk about their experience of *peer teaching* and its benefits: <http://action.ncca.ie/key-skills-sample-activities/peer-teaching.aspx>

Peer assessment in groups

Well-managed peer feedback provides opportunities for collaborative learning and gives learners a wide range of ideas about their work. It requires

- clarity regarding the process and the success criteria for the piece of work under discussion.
- practice (led by the teacher through coaching, modeling and feedback).
- appropriate partners or groups (generally of similar ability) .

Here's an approach that involves learners in peer-assessment of any piece of completed work, small or large, in any subject. Having agreed on the criteria for success, each learner carries out the assignment. When the assignment has been completed (over a period of time, overnight or in class), learners are arranged in groups of three or four to view the material. They read and pass around each other's work silently until all samples have been viewed by everyone in the group. The learners then discuss any differences. They then mark each piece of work together using the agreed criteria, perhaps starting with one that best meets the criteria for success discussed. They can also provide a comment which names one thing that the learner did well and one thing that could be improved upon next time.



Recommended further reading

Assessment and Learning Pocketbook - Ian Smith - ISBN978-1-903776-75-9

www.teacherspocketbooks.co.uk

Pedagogy and Practice Series: Teaching and Learning in Secondary Schools Unit 7 Questioning. Available to download from <http://www.standards.dfes.gov.uk>

Splitter L., (2008) *On the theme of 'Teaching for Higher Order Skills,'* accessed at <http://chss.montclair.edu/inquiry/summ95/splitter.html>.

Using ICT to access, manage and share information

A teacher can generate lots of ideas in any subject by **using images** from online newspapers or galleries. For example, the following picture contains a photograph of three Olympic winners on receiving their medal.

Students could.....



- Describe how the athletes are feeling
- Create a caption for each photo
- Predict what happens next
- Write a piece in a particular language style



Using **images** is an effective way of stimulating curiosity about a topic and generating different ideas and perspectives. You can access lots of images at <http://images.google.com/> and

<http://www.istockphoto.com/>

or check out an online newspaper that has 'A week in pictures' like

<http://www.telegraph.co.uk/news/picturegalleries/uknews/9500424/Notting-Hill-Carnival-2012.html>

<http://www.ireland.com/galleries/the-week-in-pictures/the-week-in-pictures-18-06-2012/663362>

<http://www.irishtimes.com/blogs/gallery/2012/08/26/death-of-neil-armstrong/>

Presenting and managing Information

Projects on the topic/person can be created through **powerpoint**.

1. Encourage students to insert hyperlinks to the sites they have researched.
<http://office.microsoft.com/en-us/powerpoint-help/create-a-hyperlink-HA010021479.aspx#BM2>
2. Insert animations/soundbites/video clips that will arouse the interest of the audience. This will encourage the student to focus on the target audience for their presentation. They will also have to edit the length of the piece for maximum effect so it will eliminate the irrelevant material.
3. The style of the powerpoint should suit the topic. This will expose the student to tone, mood and style. (With more advanced classes this could initiate a discussion on propaganda.)

Using online texts & resources to develop students' note-making skills

Most publishers now have their textbooks digitally available online. Display the textbook on the whiteboard/screen. Ask students through the interactive tools to highlight key words/phrases. There is also a facility to add annotations. This provides an excellent opportunity to collaborate on note-taking skills. Students then highlight their own texts in the same way until they are confident to do so independently.

Creating crosswords

As well as being a handy interactive tool for teachers, <http://www.crosswordkit.com/> is great for stimulating students' creativity in managing their information and learning. They can create crosswords on a given topic as a revision exercise for their peers. Likewise they can solve puzzles created by other students.

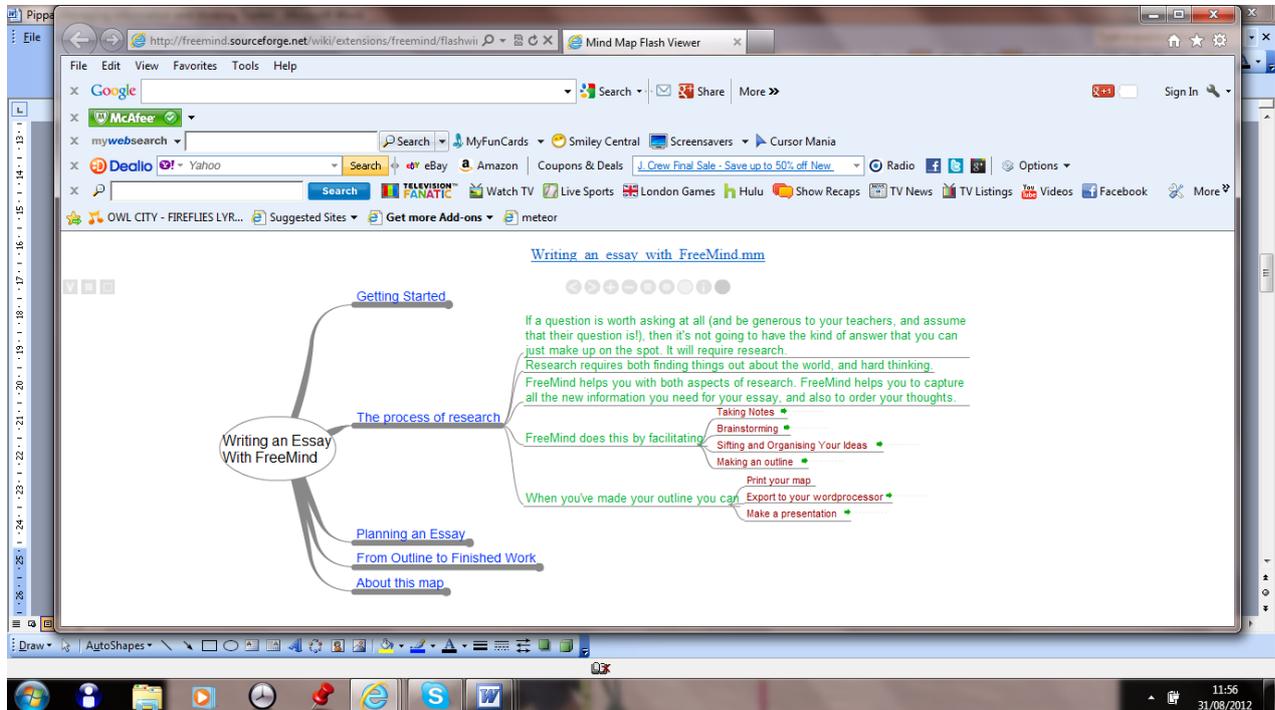
Also check out www.brainpop.co.uk for ideas.

Mind-mapping

<http://freemind.sourceforge.net/wiki/index.php/Download>

This is a mind-mapping tool that allows teachers and students to manage and organise information at a planning stage. The heading/title is written in the 'Parent Node'. Each point

is then placed in a 'Child Node' which in turn has 'Sibling Nodes' that can be used to link related points. A handy feature is to insert a hyperlink into the child/sibling node. This encourages students to fully investigate a point by attaching evidence to it. So a plan on an essay might look something like this example:



Source-

http://freemind.sourceforge.net/wiki/extensions/freemind/flashwindow.php?initLoadFile=/wiki/images/9/9c/Writing_an_essay_with_FreeMind.mm&startCollapsedToLevel=5&mm_title=Writing_an_essay_with_FreeMind.mm

Further online resources for teachers and students

www.scoilnet.ie A regularly updated site containing videos, quizzes, interactive games and syllabus guides as well as hundreds of links to specific resources for most subject areas.

www.tes.co.uk Although this site is based on the British curriculum the resources are also useful

<http://www.studygs.net/attmot4.htm> is a 'How to Study' guide for students. Get the students to use their 'skimming' skills to pick out the main ideas in the guide. They can then copy and paste into a word document the tips they found most useful. You might even set a limit of a 'Top 3' or 'Top 5'. Students can then put these into operation over the course of a week and assess their progress by writing a blog for other students to respond to. www.edublogs.ie

Making it my own



Take a little time to think about how you can incorporate some of these ideas into your practice.

Consider maintaining a diary or blog noting your actions and how your learners are responding. There is no need for this to be a secret.

Why not involve the students, and ask them to keep a journal too, and discuss it with you? And it would be great to share your experiences with some of your colleagues. (See **Getting Started – How to set up buddy meetings**)

Next steps

1. Review and list all the ideas in this resource or those you gathered whilst watching the short videos.
2. Identify one idea or a manageable number of ideas that you feel you could develop and which would improve your learners' learning in a significant way.
3. Plan how you will develop those aspects with identified classes over a period of time. (You might even consider how you might establish baselines for pupils' learning which will allow you to judge impact and learning gain.)
4. Over the next month, keep a diary/blog to record changes in the way you help learners manage their learning, agree outcomes and goals for learners; the ways in which you carry out assessments of learning and the ways in which you record and use the data arising.
5. Record also any benefits you notice for learners and for yourself. Share your reflections with appropriate colleagues.

Click here to find a reflection sheet that you can use to help you in this process:

http://action.ncca.ie/media/1257/teacher_reflection1.pdf

And here's one to use with a colleague: http://action.ncca.ie/media/882/c_reflection2.pdf

Over time, take a look at the ideas on the NCCA Junior Cycle website for each of the 6 key skills.

Don't forget to send us your ideas about what works!