

info@ncca

supporting teaching and learning

What's HOT?

Higher Order Thinking, that's what!

page 10

National Council for Curriculum and Assessment | SEPTEMBER 2008 | Issue 10



NCCA 

National Council for Curriculum and Assessment
An Chomhairle Náisiúnta Curaclaim agus Measúnachta

this issue / Updates / Transition units / AfL in primary school / What's HOT? / DVD for parents / Problem-solving / Primary curriculum review / What is it about...change? / Reporting to parents **and much more...**

welcome...

...to the tenth issue of info@ncca.

Whether you suffered the psychological set-back of returning to school at the end of August, or managed to defer your return to September, welcome back also to the rhythm of the new school year.

The return to school, to new faces (and to the same ones!) always gives cause for reflection. How did the summer go? Where did the summer go? How did the exam classes get on? What about the college places? What are the new infant classes like? Is it my imagination or are the sixth class pupils taller than the last batch? Does anyone know anything about the new deputy-principal? And that most important question of all, the one that gets everyone's attention at the first staff meeting - when is the mid-term break? These are just some of the idle thoughts of the returning-to-work teacher.

This issue of info@ncca is all about thinking - thoughts idle and not-so-idle. There is a piece that sets out some thinking about how we do change in Irish education. You can read

the latest thinking about how best to change attitudes and approaches to mathematics in the much-talked about *Project Maths*. And you can try some of the strategies for teaching thinking in the 'hot' piece about higher-order thinking and asking questions in class. This issue also gives you plenty of chances to think about assessment and reporting, and has some suggestions that you can act on, after you think about them!

Thinking about what has been achieved and what is yet to come also features in this issue. You can read about some of the findings of the second phase of the review of the Primary School Curriculum as the curriculum moves towards its tenth birthday! You can also think about the future - the plans for consultation on curriculum and assessment at senior cycle are featured. The year 2010 has particular significance for that work. The work was launched in September 2003 with a booklet called *Developing Senior Cycle Education: Directions for Development*. There, the horizon was set at 2010 and 'at the direction developments in senior cycle may have taken at that time'. Read how far we have come since 2003, and think about what has changed in your schools and classrooms since then. Lots to think about!

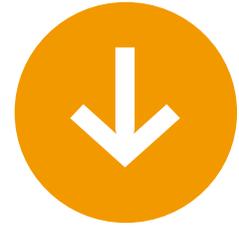


Anne Looney
Chief Executive

National Council for Curriculum and Assessment



what's in this issue



Updates	4
Transition units	6
AfL in primary school	8
 What's HOT?	10
DVD for parents	13
 Problem-solving	14
Primary curriculum review	16
What is it about...change?	17
Reporting to parents	18

Supporting teaching and learning...

info@ncca is published three times over the school year, in September, January and April.

Copies are distributed to teachers in every primary and post-primary school in the country. Electronic versions of the newsletter, in both Irish and English, are available to download from our website, at www.ncca.ie. If your school requires extra copies of **info@ncca**, please send your request by email or post.

We welcome articles from teachers as well as comments and queries about content.

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Learning in detention/care settings



Sincere thanks to the many teachers, care staff, managers and other stakeholders who responded to the consultation questionnaire on the draft curriculum framework for children detention schools, high support units and special care units. Your input is greatly appreciated. A report on the consultation outlining your suggestions, aspirations and recommendations for the framework has been posted on the NCCA website. To keep up to date with developments, go to www.ncca.ie/postprimary and follow the 'Draft Framework for Detention/Care settings' link.

Information leaflet for infant teachers

The NCCA will disseminate an information leaflet to all schools this autumn which will answer some frequently asked questions about the Framework for Early Learning. The Framework will be available at www.ncca.ie by the end of this year and will be published in 2009. If you want to know more, keep an eye out for the leaflet in your school in the coming weeks.

Formative assessment

Supporting children's early learning and development through formative assessment is the final in a series of background papers summarising much of the research used to develop the *Framework for Early Learning*. Written by Dr Elizabeth Dunphy from St. Patrick's College, Drumcondra, this paper is available on the NCCA website at www.ncca.ie/backgroundpapers.



Reporting in primary school

The report of the research carried out for the NCCA by a team from University College Cork (UCC) led by Professor Kathy Hall is now available to download from www.ncca.ie. Entitled *Reporting to Parents in Primary School: Communication, Meaning and Learning*, the study was designed to gather information on schools' reporting practices. The research examined the views and attitudes of principals, teachers, children and parents to the process of reporting and the uses to which it is put in schools and at home. It included a survey of over 400 primary schools and case studies of six schools.

Science in primary school



The final report of Phase 1 of *Science in Primary Schools* has been completed. In the NCCA commissioned research, authors Janet Varley, Clíona Murphy and Orlaith Veale of St. Patrick's College focused on the experience of teaching and learning science in primary education. The report found that children enjoyed learning in science and were very positive about 'hands-on' science. They appeared to have opportunities to take part in practical activities, to work collaboratively and to use a range of scientific skills. The report also identified areas for concern, including the frequency of children's opportunities to learn through practical activities. Children's attitudes towards certain approaches to teaching and learning such as reading and writing, copying from the board and using textbooks were also examined. Check out the full report on the **NCCA** website.

Helpful hints for postgraduate diploma students



In a bit of a spin as you prepare for your new life in the classroom? Let the NCCA help! We at the National Council for Curriculum and Assessment (NCCA) are responsible for developments in curriculum and assessment. Log onto our website at www.ncca.ie for information about our past and ongoing work. Download the post-primary syllabuses and guidelines for your subjects on www.curriculumonline.ie

Looking for clear, concise information about what your subjects will look like in junior cycle? The Junior Certificate Fact Sheets provide an overview of each subject, information about how the subject develops from primary to post primary and a selection of useful websites. The fact sheets can be downloaded at www.ncca.ie

Check out **ACTION**, Assessment, Curriculum and Teaching Innovation **On the Net**. **ACTION** is a teacher friendly website designed to help your classroom practice. Here, you can find sample lesson plans, the Assessment for Learning (AfL) materials, the ICT framework and much more. Log on to www.action.ncca.ie.

Finally, the NCCA publishes **info@ncca**. The magazine includes news and features about curriculum and assessment issues. Hard copies of **info@ncca** are available in your school. Or, you can download it at www.ncca.ie/news/newsletter. You could even subscribe to your very own online version, delivered 3 times each year to your mailbox, by completing the subscription form on the NCCA website.



ACTION website

In the May edition of **info@ncca**, we told you about our new **ACTION** (Assessment, Curriculum and Teaching Innovation On the Net) website. **ACTION** has now gone live and can be accessed at **www.action.ncca.ie**. We have a feedback form on each page if you'd like to let us know what you think and remember to keep checking back in as we'll be adding more to the site over time.



English as an additional language

English as an Additional Language in Primary Schools: Guidelines for Teachers has been available on our website since 2006. Since then, we've worked with schools to gather materials which complement the teaching methods section of the guidelines. We've gathered video footage and photographs of classes in action, materials generated by teachers as they used the teaching methods outlined in the guidelines and students' work produced during these lessons. We've uploaded these materials alongside the guidelines on our new **ACTION** website. Take a look for yourself at **www.action.ncca.ie** and let us know what you think!

For further information on any of the projects mentioned on this page, please visit our website at **www.ncca.ie**.

To comment on **info@ncca** or suggest topics for inclusion, email: **newsletter@ncca.ie**

Senior cycle: moving forward



Consultation: let us hear your views

A lot goes on in senior cycle schools, and there's a lot going on at senior cycle in the NCCA. Your representative organisations have been busy around the committee tables of the NCCA making sure that the changes to the curriculum will support meaningful learning that is both relevant to the lives of students, and interesting and rewarding for teachers.

We are now coming to a stage where we want to hear the views of a wider group of interested parties including teachers, school managers, students and parents.

When will the consultation take place?

Consultation packs will arrive in your school in November and you will have an opportunity to participate in the consultation anytime between November 2008 and January 2009.

What aspects of senior cycle will be included?

We would like to receive your feedback on a number of aspects of the curriculum at senior cycle. You can contribute to as few or as many aspects as you wish.

The consultation will include:

- an overview outlining the curriculum at senior cycle
- draft syllabuses including the Science subjects and Politics and Society
- sample short courses
- material from Project Maths.

The general materials will be available in printed copies and the subject syllabuses on CD-ROM.

How can I participate?

The consultation pack will be designed so that you can participate in a whole school staff discussion and provide feedback on that basis. You can also access all the consultation materials at **www.ncca.ie/seniorcycle** and respond online. In addition, regional seminars will be organised through the Education Centres and details of these will be available on the website. Feedback is also welcome on an individual basis in relation to one or more elements of the consultation.

Transition units

Approaches to assessment

In the last issue of *info@ncca* (Issue 9, available to download from www.ncca.ie), we described some of the steps involved in writing up a transition unit (TU) to the NCCA template. In this article we look at the approaches you could take to assessment when developing and teaching a transition unit or for general use with your other classes.

Before continuing, it's important to say that assessment time should be built in to the 45 hour TU and not be treated as an added extra. Remember too, that TUs are not 'exam subjects'—they won't be externally assessed, and they don't count for 'points'.

The purpose of assessment in transition units is to provide really good feedback to students on what they have learned and achieved in the unit, and on how they can improve their learning both now and in the future. This is essentially an Assessment for Learning (AfL) approach. What you find out through the assessment will also help you to spot any gaps in the students' learning or understanding, and to adapt the content of the unit or your teaching approaches accordingly.

Assessment methods can include:

- a project
 - a portfolio
 - an essay
 - a report
 - an interview
 - an oral presentation
 - self-assessment
 - keeping a learning journal
 - an end of unit examination,
- but not all in the one unit! If you try to assess everything that the student learns or does you will end up overburdening your students, and yourself! In the context of TUs, we recommend picking one or, at most, two methods of assessment.

Getting the right fit

When it comes to deciding how best to assess a TU, it is helpful to ask yourself: *What are the really important things that I expect the students to learn in the transition unit?* This question will bring you back to the aims and learning outcomes of the unit and to the way in which the learning takes place. For example, a TU entitled *Speech and Communication Skills* would probably be best assessed through an oral presentation; a TU entitled *Environmental Studies* could be assessed by a project where students devise ways to reduce the school's 'carbon footprint,' and assessment of a TU entitled *Community Service* might involve students presenting a diary of their community-based work placement.

Some assessment approaches worth considering

Transition units provide an opportunity for you to try out new approaches to assessment. So why not think about using self-assessment or peer-assessment with your students?

- **Self-assessment using an assessment proforma** – An assessment proforma is a kind of checklist which students and teachers devise together. The teacher sets the students an assignment and then asks them to discuss: *What criteria would you use to judge an excellent assignment?*

From this a list of *criteria for success* can be agreed which will form the basis for an assessment at the end of the assignment.

- **Self-assessment using a personal learning journal** – This is particularly useful when the learning relates to the development of the student's attitudes and values, as well as their knowledge and skills. If you check out the NCCA website you will find a very good example of a learning journal in the transition unit *Ireland – A Level Playing Field?* devised by the Combat Poverty Agency. See www.ncca.ie/seniorcycle and follow the links to sample transition units.
- **Peer-assessment** – Peer-assessment is something that needs to be carefully planned and works best when students are clear on what a good piece of work looks like. An assessment proforma can also assist in peer-assessment as it helps focus the student on the agreed criteria for success. A sample proforma which shows how peer-assessment is used in a transition unit entitled *Environmental Studies* is shown on page 6 and can also be found on our **ACTION** website, at www.action.ncca.ie.
- **Peer-assessment in groups** – Here's an approach that involves students in peer-assessment of any piece of completed work, small or large, in any subject.

Environmental Studies Assessment of a Project

Project Title

Presented by

Give an example of one environmental issue/problem that was presented

List some of the causes of this environmental problem

List two steps that can be taken to address/change this problem

1.

2.

What was the best aspect of the project or presentation and why?

Do you have any suggestions that might help to improve the project?

Assessed by Class Date

Sample peer-assessment worksheet (Developed by Terry Lawless, Bray)



Having agreed on the *criteria for success*, each student carries out the assignment. When the assignment has been completed (over a period of time, overnight or in class), students are arranged in groups of three or four to view the material. They read and pass around each others work silently until all samples have been viewed by everyone. The students 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. The teacher then holds a class discussion as to what decisions were easier or harder to make. Again, you can view an example of a proforma to support this activity if you log on to our **ACTION** website.

Advantages

There are many advantages to using both self-assessment and peer-assessment.

“ Student self-assessment and peer-assessment are skills which need to be built up over time. Students do not automatically have these skills, but should teachers invest the time, it will bring dividends in the long run. ”

These include

- making students aware of the characteristics of ‘good work’
- encouraging them to take responsibility for their own learning
- encouraging them to reflect on themselves as learners and so learn how to learn
- encouraging students to learn other ways of approaching a task other than the approach they used
- using peer pressure in a positive way to increase students’ motivation
- students using language that their peers understand and are familiar with

- students sometimes accepting criticisms from their peers that may have been ignored if given by you!

Student self-assessment and peer-assessment are skills which need to be built up over time. Students do not automatically have these skills, but should teachers invest the time, it will bring dividends in the long run.

In the next issue of **info@ncca**, we will continue to explore ideas around transition units and we will be sharing some interesting teaching approaches.

AfL in primary school

Using assessment to improve and support children's learning.

You may have read about AfL in our recent publication *Assessment in the Primary School Curriculum-Guidelines for Schools*, but what is it exactly? AfL emphasises the child's active role in his/her learning. It is about using assessment as a tool to improve and support children's learning. AfL happens before, during and after lessons rather than at the end of a unit of teaching. It allows for effective differentiation and gives children ownership of their learning. It encourages children to think about their learning rather than expecting the teacher to be in control.

AfL is characterised by five major principles:

- sharing learning intentions with children
- developing and sharing success criteria
- providing feedback
- involving children in peer and self-assessment
- using effective questioning to develop higher-order thinking skills.

This article will deal with the first four principles. For further information on effective questioning check out **What's HOT**, an article on Higher Order Thinking, elsewhere in this issue of **info@ncca**.

Sharing learning intentions

What does 'sharing learning intentions' mean? At the beginning of a lesson, the teacher explains to children what s/he will help them to learn and how it might be useful to them. It's important to be clear, and to make sure the children don't confuse the task instructions (what you want them to **do**) with the learning intention (what you want them to **learn**). If we are introducing children to foreign currency in maths, for example, we show how this could be useful during family holidays and also in later life. Sharing learning intentions allows children to see the bigger picture, rather than viewing each lesson in isolation.

How do we share learning intentions? This is one of the easiest parts of adopting an AfL approach in your classroom. Most teachers use a WALT-We are learning to... At the beginning of the lesson, s/he writes the WALT on the board and discusses it with the children.

If we use this article as an example, our WALT would be to become familiar with the principles of AfL in order to use this approach to assessment.

Developing and sharing success criteria

To enable children to self-assess and understand feedback we must develop and share criteria with them against which they measure their learning. Success criteria should always arise from the learning intention(s). They should be displayed prominently during the lesson. This helps children to assess where they are in the learning and keeps them focussed.

Success criteria are often known as WILFs-*What I'm looking for...* A teacher will sometimes develop WILFs whilst planning a lesson but they can also be developed in discussion with the children. This can be an interesting learning activity and not just for children!

Using this article again as our example, what should we be able to do at the end? Our WILFs are to:

1. name the five main principles of AfL
2. be able to explain each one to a colleague
3. be able to describe some AfL techniques for use in class.

Remember these as you read on. You may be asked to self-assess at the end!

Providing feedback

Effective feedback gives children clear direction towards improvement and is a crucial part of an AfL approach. We point out first what has been done well and then give some advice for improving. Feedback should relate directly to the learning intention. In a written task, if the criteria are that the children describe the setting in detail and develop interesting characters, feedback about the plot simply confuses the children. It is not what the children were asked to focus on, nor what they expected to be marked on. Research shows that children are likely to get feedback for other things before they get feedback on the learning intention. So they are more likely to hear:

- *'That's very neat work! Lovely writing!'*
- *'You wrote lots!'*
- *'You have forgotten some full stops!'*
- *'You made a good effort'*

before they hear feedback on the learning intention.

There are several ways of giving and receiving feedback: teacher/child, child/child, child/teacher.

A good way is to use *2 stars and a wish*. Here the teacher or peer assessing the child's work gives two pieces of praise (2 stars) and one piece of advice on how to improve next time (a wish).

We might use sentence starters or prompts to get feedback from children about a lesson. The prompts are written on cards. Children giving feedback select a prompt if they need help to get started. The prompts might include *I liked it when...*, *I found it hard to...* and so on. Prompts might be displayed in the classroom to help children give feedback to each other. The prompts will become less necessary as children become familiar with giving feedback.

Set ground-rules for the children and yourself to ensure that feedback is given in a respectful, caring manner in an atmosphere of trust.

Peer and self-assessment

The phrase peer assessment sends shivers down the spines of many teachers but it need not. Peer assessment works well with primary school children as long as they are given clear instructions about what to do. Primary school children tend to have an innate sense of fairness. If they know the success criteria, it is even easier for them to assess each others' work. Peer assessment helps children to develop such skills as the ability to work co-operatively and to give and receive critical feedback. It encourages children to think about learning. Peer assessment, like self-assessment,

gives the teacher a broader picture of how children in his/her class are managing the learning.

One way of involving children in peer assessment is to ask them to work with a talk partner. The children discuss with each other which of the success criteria they were able to meet and areas of the lesson where they feel they need more help. Together they may come up with some questions they need answered before moving onto the next lesson.

Another method is Think/Pair/Share/Square. Children are asked to think about how they got on during the lesson, discuss this with a partner and then discuss with another pair. One member of the square gives feedback to the class on parts of the lesson that the group were happy with (i.e. met the success criteria) and parts where they feel they need more help.

Children in pairs might also use *2 stars and wish* as feedback during peer assessment.

The ability to self-assess is important in later life. Children must be taught how to do this correctly otherwise they may be either too hard or too easy on themselves. They can be taught to self-assess by using the success criteria as a sort of check-list. Self-assessment gives both the child and the teacher a better idea of how the child is coping with an area of learning. It allows the teacher to differentiate tasks and to support the child more effectively.

Traffic lighting is a method of self-assessment. When children select the green light they are saying they can do the task with no help and are meeting the success criteria. Those who select amber need a small amount of help and will meet the criteria with help. If the child selects red then s/he needs considerable help and is struggling to meet the success criteria. It is useful to have the children 'traffic light' the task before they start to indicate where they think they are with the learning and again after the lesson to note progression.

You will find some good examples of self-assessment on pages 14–24 of *Assessment in the Primary School Curriculum—Guidelines for Schools*.

The NCCA recently collaborated with researchers from St Patrick's College, Drumcondra on a project about using AfL techniques with children in 2nd class. The teachers involved took video footage showing AfL techniques in use in their classes. Short vignettes of this footage will be available on www.action.ncca.ie by December 2008.

Read more about AfL in previous issues of info@ncca, which can be downloaded from www.ncca.ie/news/newsletter.

What's HOT?

Ping-pong is not HOT. That's for sure. It may have kept us enthralled at the Olympics, but in class it's a minority sport. Fishing. Now that is HOT. One good cast, and you can really get results! And you can throw the result back in and start again!

We are talking about questions of course, and about moving beyond the ping-pong rhythm associated with endless, lower-level questions (with more added on for homework), to fewer, higher-level questions that help learners to reflect and respond. As with a good cast in fishing, you can get hours out of one good question. Hours of ping-pong just leaves everyone exhausted.

HOT stands for Higher-Order Thinking, HOTS for Higher-Order Thinking Skills. Read on to find out how to promote HOT in your classes.

Small children... big questions

'Why? But why? And but, but why?' ... As teachers, we're all familiar with the endless lists of whys, as children search for ways to understand what they see, hear, smell, taste and touch around them. Asking and answering questions is part of growing up, and thinking lies at the heart of this.

Children learn to think using two types of skills—lower-order thinking skills (LOTS) and higher-order thinking skills (HOTS). Opportunities to use HOTS help children to learn how to think rather than what to think. Higher-order thinking stretches their minds and helps them develop transferable skills like reasoning, critiquing and problem-solving. They also encourage children to think creatively and imaginatively.

Bigger children...still big questions!

A teacher involved in the NCCA key skills project commented recently that *'Senior Cycle students just want notes and do not want to think. We do all the thinking for them!'* If we want our young people to be life-long learners and leave school equipped for all that life will throw at them, we really 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. That's a plus of using HOT questions; students get to generate the 'heat' (i.e. the real learning), while teachers simply generate the 'light' (with a good HOT question or two!).

What about LOTS? Closed, lower-order questions are useful when you need to check for understanding during explanations or recap sessions. A downside of using LOT questions and the ping-pong approach is that students have no time to put an answer together. Many students know that someone else (and they usually know who) will answer and they just move into a spectator role. That's on a good day; by Friday, they could well have slipped into a ping-pong induced coma!

Using HOTS in your classroom

Thinking has been called the software of the brain. It has to be regularly updated! Here are a couple of strategies you might find useful in your classroom to ensure that thinking happens for all learners. While some strategies are aimed at primary children, others are aimed at older students ...read through them and adapt them to suit your needs, and the needs of your students.

Story time

Discussing stories can be a great way to encourage children to think. Sometimes even before starting to read a book, ask the children to predict what is going to happen: *'What does the cover tell us about the story?'* When reading the story, children often ask questions such as: *'What is that? Why did X happen?'* Try to resist the temptation to give the answer. Instead, ask them to wait until the end. By then, they may already have found the answers. Invite the children to retell the story in their own words, or better still, enquire about alternative endings.

And what about well-known fairy tales? Ever thought of inviting children to contest them or spot the flaws in them? Talking about tales can raise some profound issues. Questions such as –

- Why didn't Cinderella's dad stand up for her?
- Was it right for Hansel and Gretel's parents to leave them in the forest?
- Was it okay for Jack to keep stealing things from the giant?
- How did Rapunzel get into the tower which had no door (and no ladder)?



Give the children time to think ... very interesting conversations could develop. Expect the unexpected!

Prop time

Ever remember yourself looking at something and wondering, *what on earth is that!* Imagine the conversation amongst 4, 5 and 6-year olds in a similar situation. Unusual props can be great discussion prompts. Examples of these might include

- a musical instrument or costume from another country
- an unusual vegetable or fruit
- a strange photograph—two teddies on a motor-bike
- the class bear in unusual circumstances—stuck up a tree
- items from long ago—a washboard, a fountain pen
- a large unfamiliar footprint in the classroom or yard.

Invite the children to touch, smell, listen, look and perhaps even taste (!) the prop. Get them to ask questions and to suggest responses. These HOT experiences can lead children's learning in the most unusual and interesting directions.

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 students have a chance to give an attempt at an answer. Giving sufficient time for students to formulate an attempt at an answer is very important. How about giving your students an extra few seconds to come up with an answer themselves (the average response time is just 1.9 seconds) this gives all students time to formulate their thoughts.



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 students. 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 students to think about the answer to the question as the teacher can choose anyone to answer. 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 learner to discuss answers with their neighbour or in groups – the think-pair-share approach!

Practical tips for using HOT questions

- Be clear about why you are asking the question, tell the class what to expect.
- Plan questions in a way that they become increasingly challenging for the learners.
- Give learner time to answer and provide prompts if necessary.
- Provide a safe environment by allowing learners discuss answers with each other first and build on this to have discussion on answers with the whole class.
- Ask conscripts rather than volunteers to answer questions (no-hands).
- When planning for a class, a good habit to get into is to think of one or two HOT questions to ask students in that class or for homework..... and only ask those two questions!

“ ‘Why? But why? And but, but why?’ ... Asking and answering questions is part of growing up, and thinking lies at the heart of this. ”

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 relating to the events in the story 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 become familiar with the concept.

There are a few variations on this which can really test HOT skills. Preparing questions in advance, organising radio interviews or panel discussions with the 'guests' in the HOT seat or seats, putting the whole class in the HOT seat and asking them to write their social network profile in character, generating text messages (on paper – without phones!) from and to characters in HOT seat scenarios... all of these work to get the learners thinking.

The power of persuasion

Another strategy to get the thinking going is to get the class to generate four possible answers to a HOT question and to ask the learners to vote on their preferred answer. Count the votes for each answer. Ask the children 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 they use?
- Are they going to have a campaign slogan?
- Which other group will they target?
- Will they focus on the strengths of their 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 students to generate a paragraph or a statement beginning with 'I was persuaded because....' or, 'Answer A won because.....'.

Read More...

Lipman M., Philosophy for Children, accessed at <http://www.p4c.org.nz>

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



Blooms Way?

Benjamin Bloom devised his taxonomy of learning in the 1950's...and most teachers have met it at least once since then! However in 2001, a team headed by a former student of Bloom's updated the classification and proposed some interesting changes to the cognitive domain.

1950's	2000's
Knowledge	Remembering
Comprehension	Understanding
Application	Applying
Analysis	Analysing
Synthesis	Evaluating
Evaluation	Creating

Since the 1980's there has been debate over whether application was in the right place in the list – as Bloom created it, it is a hierarchy with one level leading to the next. Problem-based learning for example, and the kind of work being done in the Project Maths schools, would place the application of learning in a new setting as part of the synthesis of new ideas. Notice how the newer list ends! Not with the evaluation of learning, but with the creation of something new..... imagination matters!

DVD for parents

The What, Why and How of Children's Learning in Primary School is now available online

September in school is a month full of questions. No doubt you have been greeted by a number of puzzled and questioning faces on a few mornings (if not every morning!) so far. While the majority of children in your class will have settled in nicely over the last few weeks, some parents may still be on edge!

They want to know **what** their children will be learning over the next few months, **why** they will be learning this and **how** they will be learning in your classroom. Primary schools have changed immensely since the majority of parents were children and there are a growing number of parents who have no experience of being in school in Ireland at all. Parents want to know what school is like now and how it differs from the time they spent behind the desk, but how can you fit all that information into a five minute conversation before or after the school bell rings?

If you have been faced with these or other questions concerning children's learning you might be delighted to hear that the NCCA DVD for parents, *The What, Why and How of Children's Learning in Primary School* is now available online! You can tell parents that the DVD can be found in the parents' section of our website at www.ncca.ie and can be viewed in five languages—English, Gaeilge, French, Lithuanian and Polish.

The DVD shows the learning experiences of five children at school and at home. They range from 2 to 11 years of age and so there is useful information for parents of children at all class levels. The DVD highlights the importance of the parent's role in helping children to succeed in learning. Through these extracts parents can gather ideas for supporting their children's learning before they begin primary school, during primary school and in preparation for post-primary school.

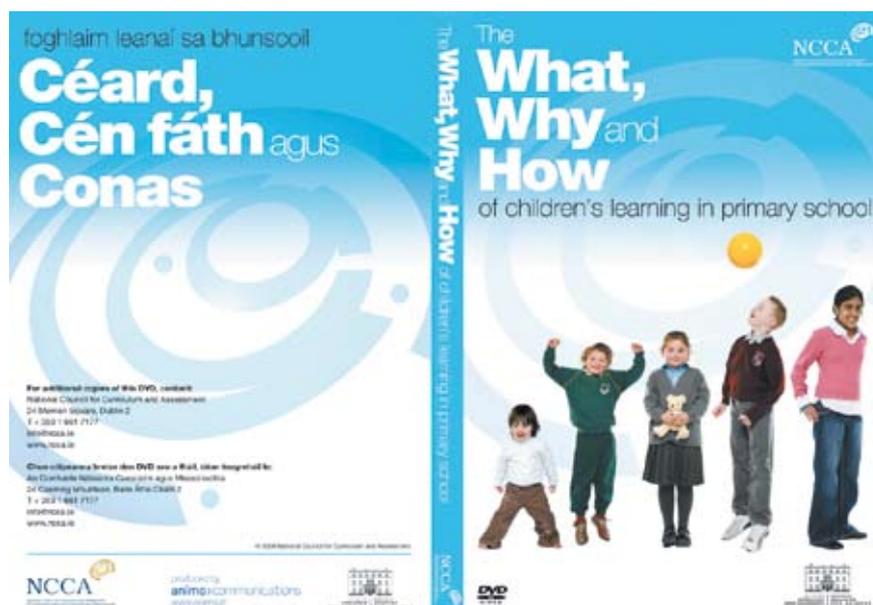
As a teacher you might find the DVD useful for sharing information about how the curriculum is organised in your classroom and school and also for prompting discussion about how parents can support the learning that is going on in your class.

So, when next faced with a puzzled and questioning parent or, indeed, when planning for meetings with parents, remember to take a look at the resources on our website, www.ncca.ie.

Copies of the DVD are also available from Education Centres.

Other useful information for parents on our website includes:

- a literacy tip sheet, *Infant classes: helping your young child to get ready to read and write*
- a leaflet on understanding standardised test scores
- a leaflet which gives information on the NCCA report card templates (also available on our website).



Problem-solving

Taking a different line with geometry

Problem-solving skills are a focus of *Project Maths*, which recognises that there are regular opportunities to re-visit problems in light of new knowledge as students progress from primary through post-primary school. Thus, they could look again at the same problem in light of their developing knowledge of geography and/or mathematics.

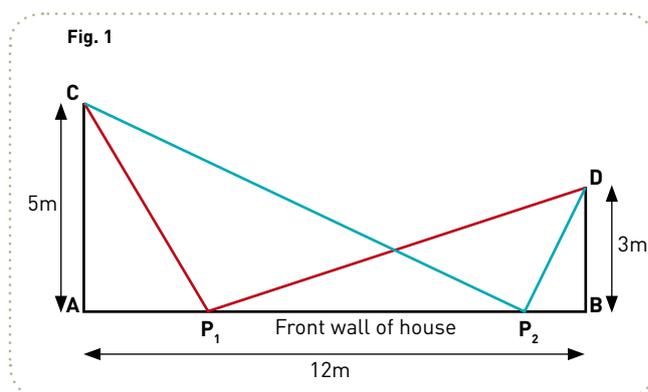
But how can adopting a problem-solving approach in teaching and learning ensure that underlying concepts are explored and understood by the students? In this article we present you with an example of a problem which can be looked at in a variety of ways and offer several strategies for finding a solution, some more accurate than others.

The TV cable problem

A family is getting digital TV installed in their house with two TV connection points. The installation company charges per metre of cable, but can locate the external connection anywhere along the front of the house since their supply cable runs along that wall.

Figure 1 shows the front wall of the house (AB), which is 12 metres in length, and the two TV connection points (C and D) located in the attic along the sidewalls of the house. From each of these points 3 metres of cable will be used to connect to the TV. The attic points are 5 metres and 3 metres away from the front wall, as shown. The diagram also shows two possible positions for the external cable connection point (P_1 and P_2). The overall length of internal cable needed for any location of P is $CP + PD$.

Students can be asked to form an opinion and/or discuss whether there is a 'shortest' overall length of cable ($CP + PD$) and how they might show that points along AB do not result in the same total length of cable. [For example, if they draw out the diagram below to scale, a string stretched along $CA + AD$ is not the same length as one stretched along $CB + BD$.]



So, how can this problem be solved? One approach could be to use a scale drawing or grid paper to represent the situation. Re-draw the diagram to scale (with 1 cm representing 1 m) and mark connection points every 2 cm along AB. In each case, measure the distance from C to P and P to D as accurately as possible and record the measurements in the table shown. Calculate the total length of cable needed in each case. Would a different scale (say, 1 cm representing 0.5 m) help to make the measurements more accurate?

Distance AP in cm	2	4	6	8	10
Length CP in cm					
Length PD in cm					
Total (CP + PD) in cm					

Try to work out how far along the wall AB the external connection point should be located so that the total length of internal cable is as short as possible. [Hint: Students could graph the total cable length against the distance AP from the completed table. What does this show?]

Is there a more accurate way to calculate the length of the cable needed for each of the possible positions of P? [Hint: for each position P the triangles PAC and PBD are right-angled; what is the relationship between side lengths for a right-angled triangle?] Does this allow a more accurate calculation of where the external connection should be located?





Students who are familiar with *The Geometer's Sketchpad* or *Solidworks* packages could adopt a computer-based approach in which they draw a scaled representation of the problem to determine the required lengths (AP, CP, PD, CP + PD, etc.). The advantage of using this kind of software is that the selection of points P is not restricted to 'nice' distances from A and a greater number of points can be taken. Again, the data from this could be used to draw a graph, which would show that a 'minimum' exists.

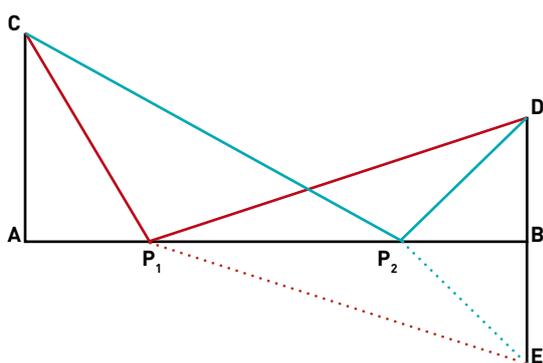
Alternative approach

As students develop their knowledge of geometry, an alternative way to solve the problem presents itself.

Figure 2 is a simplified diagram, with an extra point E directly opposite TV location D and the same distance away from the point B on the front wall of the house.

The overall length of cable needed when the connection is at position P_1 is $CP_1 + P_1E$. The overall length of pipe needed when the connection is at position P_2 is $CP_2 + P_2E$. Can you find a point P on the line AB so that the overall length of cable (i.e. $CP + PE$) is as small as possible?

Fig. 2



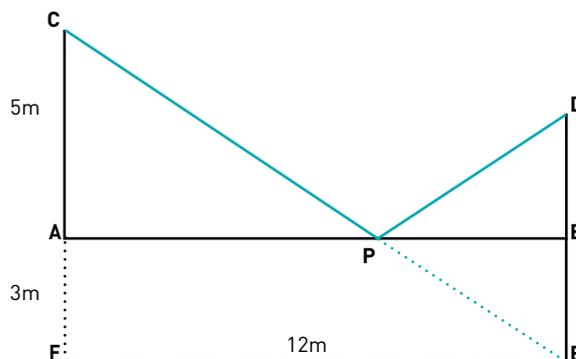
Students could be asked to discuss the shapes in this diagram.

- Look for equal angles and equal lengths; explain how these are equal.
- Are there any similar/congruent triangles? Why are they similar/congruent?

Now draw a line joining C to E and mark the point P where this crosses the line AB. Students could be asked to compare the length of $CP + PE$ to the length of $CP_1 + P_1E$ (or $CP_2 + P_2E$)? Why is CE the shortest total length of connection cable?

How far from A along AB is the point P? **Figure 3** shows two triangles. Students can be asked similar questions as before about equal angles and similar triangles. [The triangles ACP and BEP are similar, and so corresponding sides are proportional; $AP:PB = 5:3$ which should lead to AP being 7.5 metres.] Note that the path from $C \rightarrow P \rightarrow D$ is the path that a ray of light from C would take if the line AB acted as a mirror surface.

Fig. 3



This diagram should enable calculation of the total length of internal cable needed. [Hint: Instead of finding CP and PE separately, in the triangle CFE use the theorem of Pythagoras to find the length of the hypotenuse CE. Computer software can also be used to find the required length.]

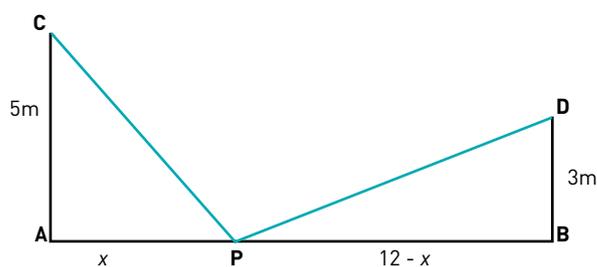
As an extension exercise, students could be given the installation company's quoted price per metre of cable and asked to calculate the total cost, including the cable from the two attic connection points to the TVs. Another possibility could be to ask students to design a problem which could be solved using a similar approach. This can get them thinking about ways in which mathematics can be connected to real-life situations.

Solution using calculus

Much later, students might be interested in finding out how the problem could be solved by using calculus to determine the minimum total cable length. **Figure 4** can be used as a starting point for this approach, with 'units' of 1 metre.

It will be necessary to find an expression for the total length of cable in terms of x (the distance from A to P) and then use differentiation to find the value of x which makes this total length a minimum. [The solution gives $x = 7.5$; thus P should be located 7.5 metres from A.]

Fig. 4



Primary curriculum review

Phase 2 final report is now available

Remember filling in long templates over a year ago? Ever wondered what story the responses to the various questions told? This article gives snippets of that story, as told by teachers, parents and children.

Templates were used to gather data from almost 1,400 principals and teachers about their experience with the curriculum for Gaeilge, science and SPHE. This work was part of Phase 2 of the review of the *Primary School Curriculum*. Another part of the review involved learning from children, parents, teachers and principals in eight schools in a School Case Study. In addition, as you know from the last two issues of **info@ncca**, the NCCA also commissioned a team in St. Patrick's College to gather more detailed information from children about their experience with science in the primary school.



So what did we find out? What are the 'biggies' in this second phase of review?

Curaclam na Gaeilge

Teachers highlighted the amount of oral Gaeilge being used informally by children and they focussed on children's increased enjoyment in learning the language. One teacher noted, *'Motháim go bhfuil dearcadh dearfach ag an cuid is mó den rang ar an nGaeilge. Cabhraíonn an drámaíocht agus ról-ghlacadh cuid mhaith le seo.'* (*'I feel that the majority of children in my class have a positive attitude towards Gaeilge. Drama and role play help a lot with this.'*) They referred to children's growing sense of pride in, and love for, their language, culture, heritage and community.

This point was echoed by children, *'It is the language of our country, English was only brought in, but I think it is nicer to have a bit of Irish.'* The negative perceptions about the language that children can pick up from parents, peers and the community were reported as a challenge. Teachers also identified a lack of age-appropriate, modern and interesting resources such as teaching materials and real books. This was as relevant to science and SPHE as it was to Gaeilge.

The science curriculum

Teachers noted children's interest in and enjoyment of science. They reported particular success in developing their skills in 'working scientifically', and in supporting their growing awareness and understanding of the world.

Children also recognised this impact, *'If we didn't do science you wouldn't really know anything about the body, and you wouldn't know anything about electric currents or magnet or anything. So it is nice to have a general idea.'*

Children agreed that they liked learning science very much and they spoke of it being fun. One second class pupil summed it up well by saying, *'Ohhh, I LOVE Science!'*

Parents too were enthusiastic about the subject. One parent explained, *'It is because the kids are actually getting down and dirty and doing everything and I think that is fantastic. They are experimenting.'*

Science wasn't without its challenges, however. Teachers noted the difficulty of using hands-on, practical work with large class groups. They also spoke of the challenge of locating, assembling and storing resources.

The SPHE curriculum

Teachers identified the growth in children's personal development—their self-awareness, self-confidence and self-esteem—as a success. They referred to children's growing awareness of the needs and opinions of others.

Children, too, were aware of the importance of this aspect of SPHE. One child thought learning SPHE was, *'...important because you are aware of other people's feelings'* whilst another felt that, *'If we didn't have SPHE we wouldn't socialise with other people.'*

One teacher wrote that the strand 'Myself and others', *'...encourages turn taking which affects all other tasks and lessons.'* Teachers also spoke of children's increased awareness of threats to the environment and of the ways in which they could play a role in protecting the natural world. In terms of challenges, teachers referred to their own discomfort with teaching some elements of the SPHE Curriculum such as Relationships and Sexuality Education.

And there's more.....

Time

As well as subject-specific findings, the review drew attention to cross-curriculum issues, namely the shortage of time! Teachers highlighted time as the greatest challenge facing them in teaching the three subjects under review. They outlined two dimensions to this. The first focused on curriculum overload and the second on class size/children's needs. In exploring the time dilemma, teachers reported insufficient time to simply do the job of teaching—

to cover the objectives in all subjects; to promote hands-on learning, to assess each child's progress, and meet the needs of all learners. And that's before we get to the particular challenges teachers reported in multi-grade classes.....

So where to next?

As you can see, Phase 2 of the review highlighted many highs in schools' experiences with the curriculum for Gaeilge, science and SPHE. Equally, there were some lows. We are

currently working on a booklet which summarises these in a bit more detail and, very importantly, sets out what we plan to do in response. We hope to send this to every school later this year. In the meantime, if you would like to find out more you can check out the final report of Primary Curriculum Review, Phase 2 and the final report on Phase 1 of the commissioned research, *Science in the Primary School*, on the NCCA website at www.ncca.ie.

What is it about...change?

How have you reacted to recent changes in the curriculum you work with or the approaches to assessing the progress of learners you use, or the ways you go about teaching and learning?

Effective change

We don't want to change things just for change's sake. All of us would like to bring about more effective change if that means improving the educational experience of the learner or so that the school generally becomes better at what it does. What are the keys to the success of bringing about effective change? What does it take to achieve real, deep and lasting change in education? These are questions that the NCCA has recently been thinking about. It's reflective of the fact that, in recent years, as the NCCA has worked more directly with schools on a range of curriculum and assessment reviews and developments, we've gained a stronger sense of some of the keys to successfully leading and supporting change in schools.

Our work with schools – how it has informed our thinking

The NCCA has recently worked directly with schools and networks of schools in a number of areas. At primary level, work with schools has focused on research and review of the **Primary School Curriculum**. At post-primary, work with a range of subject teachers and schools has focused on how **assessment for**

learning in one initiative, and **key skills** in another, can be effectively embedded in daily teaching and learning in classrooms. Some network schools have been directly involved in curriculum development through the generation of **transition units** for their Transition Year Programme. Others have been involved in looking at the development of **learning profiles/ education programmes** in the context of educational disadvantage. This work with schools has been informed by international research and thinking on the nature of educational change and on how teachers and schools are so central to that change.

Project Maths – new thinking on leading and supporting change

Perhaps the strongest expression of some of the newer thinking on leading and supporting change is represented by *Project Maths*. In *Project Maths* schools will be directly involved, from the start, in junior and senior cycle curriculum and assessment development, in the generation and undertaking of professional support, and in the carrying out of the change with students. In some ways, *Project Maths* can be viewed as a first

attempt to replace the concept of 'top-down implementation of change' with the evolving idea of 'leading and supporting change in schools'.

Principles of change

As a result of working directly with schools, we've begun to try to gather together some principles that form the basis of the idea of leading and supporting change in schools. These principles, among other things, could contribute to the ongoing discussion within the education system about how to achieve change that is real, deep and lasting. They centre on the fundamental principle that it is at the level of the school, through the teacher and learner, that real change happens.

Further information

In this short article we can only introduce this topic, but you will find a more extensive account of the NCCA's principles of change on the NCCA website, www.ncca.ie, in a paper called *Leading and Supporting Change in Schools*. We welcome your response to them. Contact us at newsletter@ncca.ie.

Reporting to parents

Templates online....a quick guide

Revised Report Card Templates (RCTs) for primary schools are now available on the NCCA website, www.ncca.ie.

This short article gives you a quick guide to what they offer teachers and parents.

There are nine templates...why?

If you go back to the article in **info@ncca**, Issue 9, April 2008 - which is available on www.ncca.ie - you can read that teachers and parents are generally agreed on the importance of reporting on **four key areas** of the child's achievement and progress:

- the child as a learner
- the child's social and personal development
- the child's learning across the curriculum
- how parents can support the child's learning.

So far so good...but agreement on the *what* of the report is just one step in the process. Clearly, it is far less likely that there will be the same level of agreement on the *how* of reporting. Our work with teachers and parents on templates for reporting has highlighted the different approaches to reporting that we have reflected in the current templates.

Are there nine completely different templates?

No, the templates are not completely different from each other. What they offer is a range of ways you can combine what are essentially

two approaches to reporting – the approach that uses a **tick-box method** or scale to show a child's achievement or progress and the approach that uses a **teacher's comment method** to indicate those things.

The 'tick-box' method with space for teacher comment

Mathematics	★	★	★	★	★
Understanding and recalling					
Using procedures					
Reasoning and problem solving					
Explaining and communicating					

The 'teacher comment' method

Learning and working with Mathematics

So, the templates provide wide choice by combining these fundamental approaches in different ways. A quick browse through the templates online will show you that the nine options give a good range of different combinations.

Can a school 'personalise' the template it chooses to use?

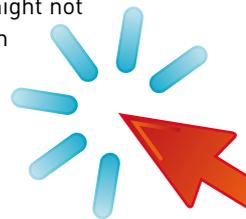
To a degree, yes! The front cover space is the same for all templates and schools can customise this by including the school crest, contact details, and so on. The customised cover can then be combined with any one of the nine templates which are available as English or Irish versions.

Are there any support materials with the templates?

There are two information leaflets/guides on the website, one for schools

and teachers and one for parents. The school leaflet is aimed particularly at teachers who might be using the open-ended, teacher's comment approach to reporting and would like some reminders of areas which they might include under each heading. It is available in English and Irish.

The leaflet for parents aims to make the messages contained in the report more accessible and understandable. It is available in English and Irish, and in a number of other languages to support parents whose first language might not be either English or Irish.



Can the templates be used for all classes and for reporting at different times during the school year?

Yes, the templates can be used for all classes from infants to sixth class, but browsing through them will give teachers the opportunity to decide which one/s are most suited to the needs of their particular school and class. Equally, the templates can be used either for mid-year or end-of-year reporting.

And you might report back to us....

We want to continue to gather feedback on the templates and their accompanying information sheets. There is a short feedback form on the NCCA website for this purpose. We would be grateful if you could use this form to comment on your experience of the templates, and on how they might be improved into the future.