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## Practical assessment for learning

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How to cite:

Lee, Clare (2012). Practical assessment for learning. In: Lee, Clare; Johnston-Wilder, Sue and Ward-Penny, Robert eds. A Practical Guide to Teaching Mathematics in the Secondary School. Routledge Teaching Guides. Abingdon: Routledge, pp. 13–20.

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Version: Accepted Manuscript

Link(s) to article on publisher's website:

<http://www.routledge.com/books/details/9780415508209/>

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# Chapter Two - Practical Assessment for Learning

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The first and most important thing to say about 'Assessment for Learning' is that it is not a set of techniques or recipes but rather a way of thinking. If you are using 'traffic lights' or drawing names out of a pot in order to choose who answers a question, you may or may not be using assessment *for* learning. Assessment for Learning (AfL) involves both you and your pupils knowing what they need to learn, establishing how well the pupils are learning from any activities they engage in and modifying learning plans in order to increase that learning. In fact Perrenoud (1998) stated that when AfL is truly in place it will seem to disappear as teacher and learner move together towards enhanced learning. Therefore AfL is not a series of add-on ideas, but fundamental to every lesson. As teaching has historically often been 'done to' learners, as a student teacher you may not have a series of ideas from your own experience which will enable you to implement the principles of AfL, therefore this chapter sets out to provide some practical ideas for increasing Assessment for Learning in your classroom.

Developing the way of thinking that is Assessment for Learning demands that for every lesson you:

- find out about what learning your pupils are likely to bring to the lesson and how you will check that they do bring that learning;
- decide what your pupils need to learn during the lesson and how you will let them know;
- know how they, and therefore you, will recognise if they have been successful in that learning;
- check how learning is proceeding on a regular basis and modify your plans if and as necessary;
- consider how they might receive feedback that will help them to continue to learn; and
- strive to be sufficiently flexible to maximise learning for all your pupils.

Each of these aspects works with the others to develop the classroom ethos that characterises AfL: where teachers and pupils are working together in a quest to improve pupils' mathematical knowledge. However for convenience each will be considered in turn.

## **Finding out what learning your pupils bring to the lesson**

Assessing prior learning is a very important part of teaching, you do not have the time, nor is it a good idea, to attempt to teach your pupils ideas they already know. Part of making decisions about this will involve looking at data, but this will often not tell you a great deal. Knowing that a pupil is 'working at Level 5' can mean so many things. Is she good at data handling but finding algebra difficult? Or possibly the other way round? No matter what data is recorded the information it gives will only tell you about generalities and for teaching you need much more fine grained information. Therefore at the start of each and every topic that you teach, use an activity that will

give you sufficient information to plan to teach the class new mathematics and not to tell them what they already know. You could:

- use mind mapping – on a mini whiteboard or an A3 piece of paper. Ask the pupils to work in pairs to complete a mind map of all the words and ideas that they know already associated with the topic in question. They could draw pictures if they cannot remember the exact words. Asking pupils to include pictures, examples of questions or real-life applications will help them explore their knowledge further. Working in pairs means that they can prompt one another to remember ideas that are ‘on the tip of their tongue’ so that they report more fully on the current state of their knowledge.
- use **KWL** sheets- ask each pupil to write their name and the topic on a sheet of paper and then to divide the sheet into three columns; label the first **K**, the second **W** and the third **L**. Under the first column they should write all the words and ideas they **K**now about the topic you have introduced, in the second they should write things they have heard about and **W**ant to know more about, leave the third column blank for now, they can add what they **L**earn to this column later. Collect in the sheets and modify your plans accordingly. Don’t forget to include many of the ideas that they want to know about and to ask the pupils to fill in the **L** column after a couple of lessons.
- test them using the ‘end of topic’ test – if you already have a test that defines what the pupils have to know, understand and do at the end of the time devoted to the topic, then use it at the start of the topic. Make sure that they understand the point is to find out what they can do and what they need to learn and therefore you don’t mind if they cannot answer any of the questions. Ask them to answer it honestly so that you can plan to help them learn what they need to learn. They could just traffic light (red for ‘cannot do’, amber for ‘heard of it but cannot remember’ and green for ‘can do’) the questions rather than answering them in full, in order to let you know what they need to review and what they need to learn.

Each of these ideas will require about 15 minutes of lesson time, but if that is at the beginning of a lesson you will have to be very flexible in how you use the rest of the lesson; you cannot just continue as though you don’t have the information the pupils have worked hard to give you. Therefore it is probably best to devote the last 15 minutes of a previous lesson to the ideas above, giving you time to think about what they tell you and plan accordingly.

### **Deciding what your students need to learn during the lesson and letting them know**

This may seem, at first, the least complex of the ideas that underpin Assessment for Learning. The national curriculum may have been used to construct a scheme of work suitable for students in your class, and is therefore where you start to establish what the students need to learn in any lesson. However a scheme of work can only let you know what you might expect to teach your students. In order to decide what learning you intend to happen in the lesson you will also need to take into account what you have found out about the prior learning of this class, their interests and particular

abilities. Once you have all this information you can include the pupils in knowing what the learning intentions are for the lesson.

For example:

- when planning a series of lessons on plotting quadratic graphs from tables you might find you need to spend a lesson revising the manipulation of negative numbers first.
- when teaching linear equations you might find that the pupils have developed a good understanding of one-step equations from previous lessons, and so you need to move on to more complicated equations, or a related rich task, see Chapters Six, Eight and Ten for ideas on rich tasks.

It is crucial when using the principles of AfL that every lesson has a planned learning intention and that the pupils know the lesson will have been planned with a learning intention in mind. What is *not* crucial is to write the learning intention or objective on the board at the start of the lesson. Of course writing the learning intention on the board may be school policy and therefore you will be expected to do this. It is often school policy because having the learning intention on the board demonstrates that the lesson has been planned with a learning intention in mind and enables the teacher to share that intention with the pupils. When the pupils know what they are intended to learn, they will be encouraged to think about their own learning and their progress, which builds good learning habits. However there will be many lessons where you want the pupils to tell you what the learning intention was at the end of the lesson, or indeed to ask the pupils what they think they have been learning by engaging in a rich task, an activity or problem solving exercise.

Mathematical learning must not be constrained by the learning intention, that is why I always prefer to use the term ‘intention’ to ‘objective’. It is important that the pupils know that all lessons are intended to enable them to learn more about mathematical ideas and thinking; it is not important nor always reasonable to expect the learning to exactly fit in with your initial plans.

### **Making sure your pupils, and therefore you, recognise where and how they have succeeded in learning**

Knowing exactly what and how you have been successful, builds resilience in learning, and enables pupils to feel good about their learning. They will then be able to continue the struggle to understand and learn to deal with any misconceptions or other barriers to learning. Therefore designing ways to enable pupils to know exactly how successful they are in their learning is important.

- Most lessons or sequences of lessons can have success criteria or learning outcomes which set out how the pupils can measure success for themselves. For example you can draw a good line graph if you:
  - use a sharp pencil and a ruler
  - are able to work out sufficient appropriate co-ordinates using a given equation for the graph
  - draw horizontal and vertical axes and label them at equally spaced intervals, suitably scaled to allow you to show the important features of the graph

- join the points with a ruler if the line is straight and with a thin arc freehand if curved.
- Most of the above criteria can be broken down further depending on what the class needs to learn about, and of course using ICT software such as Autograph or Geometers Sketchpad would help the pupils explore more and learn more about these ideas. ‘Working out sufficient appropriate co-ordinates using a given equation for the graph’ could take several lessons, as the pupils learn to recognise how to work out  $y$  given  $x$  and  $x$  given  $y$  and what  $x$  and  $y$  mean in the first place. Success criteria should indicate success for the pupils in any given lesson. Carefully set out success criteria can become assessment criteria both for you in marking work and for the pupils themselves in peer-assessment activities.
- Success criteria can link from one lesson to another; in the above example some pupils may have understood that you need three points to draw a straight line graph, but others may not. Hence some will move next lesson onto thinking about ‘where do I need those points to be?’ (appropriate co-ordinates) whilst others continue with understanding ‘sufficient co-ordinates’, or even working with linear equations. Lessons that take account of the pupils’ success measured using the criteria are lessons that the pupils know are built around their needs and ultimately lessons that enable all to succeed. You could photocopy the success criteria and ask the pupils to stick them in their books and cross off the ones that have been achieved as they move through the learning episode.
- Success criteria can be applied for the whole class or for individuals and can indicate how the class (or individual) should behave in order to learn successfully. For example if you want the class to work as a group in order to learn some mathematics you might set out criteria for this.

***NOW TRY THIS:*** Pupils can set their own criteria for success and this is a powerful way to help them develop as independent learners and to judge their own success. With a class that is used to using success criteria in lessons, ask the pupils to define what success will mean in a particular lesson. Of course as teacher if they forget to include something important you can say so and add it in. Setting out success criteria in this way can take more time than writing success criteria yourself but it helps the pupils learn an important lesson, that they can decide for themselves what success means.

All of these ideas are about helping pupils to guide their own learning effort, to be able to assess what they need to learn and, in the best case scenario, to sort out for themselves how they can best do that. However they are also very useful for you because they help you:

- plan the lesson. Once you have worked out what success in a particular idea or concept looks like, it becomes easier to choose activities that will enable that success.
- decide what questions to ask. The questions you use in the lesson should be designed to probe pupils’ understanding of the criteria.
- know what the pupils have learned and what they are finding difficult and therefore help you know where to intervene and how.

## Checking how that learning is proceeding on a regular basis

Checking how the pupils' learning is going can be seem simple enough, ask them! However you will not have time during every lesson to ask each student a probing question. However here are a few suggestions to make sure you gather as much high quality information as possible.

- Ask a question worth asking and give the pupils time to answer it. It can be easy to be lulled into a false sense of security when everyone seems to be able to answer short, undemanding questions, or when you ask 'do you understand?' and all the pupils nod. The best way for you and the pupils themselves to know whether they understand is to ask a planned and probing question and allow the pupils time to think about it before answering.
- Take five minutes for the pupils to discuss in pairs what they have learned so far in the lesson. Ask them to identify something they feel good about and then something they feel unsure about. Ask two or three pairs for what they have learned well and ask for hands up to show if others also feel confident about this aspect. Now ask for 'issues': take two or three answers, again with votes, and then ask if there is anything else that hasn't been mentioned already. Make an obvious note of these 'issues', and if this is the end of the lesson then start the next lesson dealing with the 'issues'.
- Use exit passes. Give each pupil a piece of rough paper and ask them to write an answer to a probing question or what they feel confident about and what they still have issues with or draw a mind-map or something that will provide the information you want. The pupils will hand these in as they leave the room. Try giving out the exit passes at the start of the lesson to remind them to think about checking their own learning.

**TASK:** Choose a topic that you will teach in the near future. Think about one or two questions that would probe your pupils' understanding of that topic. Write down these questions so that you can use them to check their progress when you teach the topic.

The point about these ideas is to get responses from nearly all pupils in the class and that these responses tell you what you need to know. As a student teacher you will find staying in charge of all the class difficult at times and your attention can easily be consumed by a few pupils, so it is important to plan activities that will enable you to review and respond to all of your pupils without marking all of their books every lesson.

## Giving feedback that will help your pupils continue to learn

As discussed in the previous section, helping pupils know they are successful learners is vital and the 'ticks' teachers have used for centuries can do that. However there is more to good feedback than that. Your pupils will learn best if they know where and how they have been successful in their learning *and* how best to continue to be successful. Therefore effective feedback will let pupils:

- know where and why they have been successful;

- know what to do next to continue to learn and develop their understanding of mathematics;
- have the time and opportunity to act on the advice given.

If books are marked and comments given but there is no time or requirement to read those comments then pupils will just glance at the comment. The best 'improvement advice' requires the pupil to do something. It might suggest that a pupil:

- reads a page in a textbook, tries out some questions and then writes a sentence (with diagrams) on 'what I must not forget to do'.
- goes and sits with a given person for five minutes and discusses a particular idea and then returns to their place and records the important ideas discussed, possibly completing some specific questions at home to ensure that they have understood.
- writes three questions (with answers), an easy one, a medium one and a hard one so that they think about the concept as a whole and consolidate their understanding.
- finds the same topic in a more advanced textbook and makes a mind map of the topic they have just learned and where the ideas lead onto next.

All these ideas for 'improvement advice' require at least some lesson time. Acting on individual feedback given through book marking or orally in the lesson should be thought of as one of the many varied learning activities that enable pupils to learn mathematics. If lesson time is not given to acting on feedback then teachers' work in giving comments will be wasted.

**TASK:** Next time you can access some pupils' work, or using some you have available already, write 'two stars and a wish' for about five pupils. That is for each pupil you will point out two things that they have done well in their work and then write some 'improvement advice', a wish, that they can act on to continue to improve.

### **Being sufficiently flexible to maximise learning for all your pupils**

This is probably the single hardest aspect of really using Assessment for Learning for students and even for some experienced teachers. When you ask a question or watch a group of pupils working together you will find something out. You may be lucky and find the respondent to your question understands the idea you have just explained and therefore you can carry on with your next planned activity. However, what if the question reveals the respondent has no clue what you are asking or is fully conversant with both the ideas you have just explained and the ones you intended to explain next? You will need to be flexible.

In order to be able to say that you are using AfL you must be prepared to change the subsequent learning activities in the light of the information you uncover. You will get used to using your subject knowledge in order to do this but here are some standbys to help out while you build your experience.

1. Ask challenging questions towards the end of the lesson so that you have the time to plan to respond. Do this often so pupils know you want them to put in some effort in constructing their answers, and so that you can really assess what they need to do next.

2. Have a few copies of several different textbooks available. If a pupil 'doesn't get it' or has 'done all this before at primary school' point them to a suitable textbook and tell them to select explanations to read and questions to do that will help them to move forward. Asking pupils to take responsibility for their own learning is appropriate, providing you support them in doing so. By offering a variety of materials they can choose a layout or explanation that makes sense to them.
3. Ask pupils to work together so that discussion is part of their effort to understand and move forward.
  - seating someone who 'sort of gets it' with someone who 'has no idea' can help both of them to broaden their understanding.
  - asking pupils who have fully understood the ideas to work together to think about where the ideas could be used 'in real life' or what connections those ideas have with other ideas that they have learned this year, can help to make mathematics more interesting and engaging.
4. Ask the pupils to work in pairs to write an easy, medium and a hard question. This requires pupils to work at their own level; and then to extend their understanding. Ask the pairs to swap their questions with another pair, the second pair will complete the questions and then the group of four should discuss the answers. Then discuss as a class what made a 'good' question in this topic, what issues do the pupils still have? Explain there and then or use the issues to plan the next lesson.

***NOW TRY THIS:*** Find a class list of pupils that you know well. Pair up the pupils into 'learning buddies', choosing pupils who can help one another out, these should not be people they normally sit with. Tell the pupils who their 'buddies' are and say that if they are stuck they should go and discuss their work with their 'buddy' before asking for help from you as teacher. You could use this idea for a 'rich' activity such as those in Chapters Six, Eight and Ten. Try this out over a period of two weeks. Reflect on how well this works for this class and whether you want to extend this way of working.

You will notice that most of these ideas require your pupils to work collaboratively to help one another continue to move forward with their learning. This is important. Many teachers, especially when they start, think that they are the only one in the room who knows what to do. Most people find learning with one another the best way to improve and you should make use of this in the classroom. Activating the pupils as learning resources for one another means there will always be someone available to help if a pupil gets stuck and there will be someone for the pupil who is zooming forward to try out ideas with and to challenge those ideas. Research (e.g. Gartner et al. 1971 and Goodlad and Hirst 1989) has also shown that pupils who explain ideas to others, both consolidate the ideas for themselves and deepen their understanding. Any classroom where everyone sits in silence for every lesson is not maximising learning.

### **Summary:**

In this chapter you were invited to think about the principles of Assessment for Learning and how to introduce those principles into your lessons. The ideas discussed included:

- what Assessment for Learning is and what it is not;
- how to find out about your pupils prior learning;
- deciding on what your pupils need to learn during the lesson and how you can let them know;
- how you and your pupils can recognise if they have been successful in their learning;
- checking how that learning is proceeding on a regular basis;
- providing feedback that will help pupils continue to learn;
- ideas that can allow you to be sufficiently flexible to maximise learning for all your pupils.

### **Further reading**

Lee, C. 2006, *Language for Learning Mathematics – Assessment for Learning In Practice*, Maidenhead UK: OUP

Black, P., Harrison, C., Lee, C., Marshall, B. and Wiliam, D. 2004, *Working Inside the Black Box*, NfER Nelson