

Numeracy Projects

Learning to be a Facilitator

In training for the Citizens Advice Bureau advisors are asked to avoid "the tyranny of shoulds and musts". Advisors learn to assist a client to reach his/her own course of action rather than being directed.

The attached teacher-directed Professional Development (PD) model takes the same basic position; the teacher defines and controls their own professional development. The facilitator does not tell them what they should or must do.

Further the model is holistic; all aspects of a lesson are observed then discussed. The observation and discussion is around four major areas:

- the quality of the teaching
- the teacher knowing what was learnt in the lesson
- quality classroom management
- planning to practice self-determined issues of quality teaching in future lessons

Evidence Gathering

In this model the facilitator observing a lesson writes down actions and words only. One useful idea is to draw a diagram of the classroom layout and assign numbers to the students before the lesson starts. If there is time other identifiers can be added to the diagram to assist identifying students during the feedback. E.g. #21, small blond boy. If the number of students is small numbers might be dispensed with and descriptors used.

Example of a section of facilitator notes taken from an observed lesson:

You write $198 + \square = 321$ and ask for a solution method. You pick #21 to answer after 4 seconds. No other hands are up.

"Yes, Jenny."

#21 (Jenny) says "Add 2 and 121 more so the answer is 123."

You say " Good. Does everyone understand Jenny's answer?"

No-one answers.

#18 is whispering to #19. #19 smiles.

2 seconds later you say "Can anyone make up a similar problem?"...

This example is drawn from only 30 seconds of a lesson. And there are many teaching and management issues already suggesting themselves.

Gathering as much evidence as possible is important for the feedback after the lesson.

Feedback

Ideally feedback is as close to end of the lesson as possible. This allows both teacher and facilitator to remember what happened in the lesson. If, for organisational reasons, the feedback must be delayed the objective record of actions and words becomes even more critical as memories fade. For example, the feedback might be after school when the lesson was first thing in the morning. The potential for sloppy ineffective feedback is very high if the record taking was insufficiently detailed. In this PD model the facilitator does *not* give back opinions or suggestions for future action. The facilitator discusses what was said and done by the teacher and students. The teacher is expected to interpret what happened in the lesson and decide what he/she will do in future lessons.

Some examples:

- the facilitator might report back "#3 threw a pen across to #14" rather than saying "you should stop #3 throwing pens."
- For "The students settled to work quickly" the teacher circles "yes" on the sheet. The facilitator disagrees but does not tell the teacher. Instead the facilitator uses evidence: " The time from when you told the class to settle for the first time and the teaching began was 4 minutes". Now the teacher decides to change the "yes" to "no" on his/her form.

What If the Facilitator Disagrees With the Teacher's Interpretation of Events?

In this PD model disagreement is uncommon. But when it does occur it is the ultimate test of the facilitator's adherence to the principle that, in the end he/she does not tell the teacher what to do. Tempting as "shoulds" and "musts" are in this situation the model assumes they are to be avoided even in extreme cases.

Facilitator as Expert - Teacher as Novice

In the Numeracy project it is unlikely that the facilitators are experts and the teachers are novices. Therefore it is unwise for the facilitators to tell teachers what to do. And even if the facilitator were expert it would still be very unwise.

Who is the Facilitator

The facilitator who is also a HOD/DP etc. runs a special risk in that they may occupy special positions of influence which may run counter the principles of this PD model. Therefore it is suggested that such a facilitator makes it clear from the start with their teachers that this process is not:

- about appraisal
- about giving advice
- about criticising

Confidentiality

Trust between facilitator and teacher is central to the model. It is therefore suggested that maintaining confidentiality about what happens in a lesson is very important. It is strongly suggested this be total - no gossiping to others, no complaining how useless the person is at managing the class, no words in the ear of the members of the senior management team and so on.

Beliefs of the Facilitator

There is a wide range of opinion of how to be an effective facilitator. This PD model may run contrary to facilitator beliefs about how to feed back and discuss a colleague's teaching. Some who see nothing wrong with the "musts" and "shoulds" may not want to use the model. Before rejecting it is suggested that the facilitator experience the PD model as a classroom teacher. This would enable them to consider how useful it is. The facilitator might ask the regional co-ordinators to model the PD model in their class.

Teaching Mathematics: Teacher Self-Assessment

Content

Part A	I Focus on Teaching
Part B	I Focus on Classroom Climate
Part C	I Focus on Students' Learning
Part D	I Focus on Planning for Future Lessons

What I Will Do

I will self-assess after the lesson.

I will not ask the facilitator about advice about what I should practice in future lessons.

I may choose to ask the facilitator for information about the numeracy project and resources when completing Part D.

What I Expect From the Facilitator

The facilitator will:

- take a detailed record of actions and words in the lesson for later discussion.
- in the feed back session discuss words and actions only.
- discuss planning for future lessons only after the feedback is complete.

The facilitator will *not*:

- offer praise or criticism
- give his/her opinions about my lesson
- disagree with my reflections on my teaching and management but will give me evidence from which I may conclude that I was wrong
- provide me with written comments about the lesson
- select aspects of teaching for me to practice

Records and Use of Information

I will write on the record sheet and no-one else.

I can ask the facilitator for his/her lesson records if I choose.

I expect that anything written remains confidential between us.

Part A: - I Focus on Teaching

I have selected and circled up to 4 points from the following list. I have practised these before any facilitator observes me teaching. Initially my choices included two of the points marked •. When there are a number of sub-categories within a teaching point (the grey boxes) I practice them in the order they appear.

Setting Up the Lesson

Evidence - Actions/Words

• I understood the strategies and thinking that my students used in previous lessons and I planned tasks that challenged them

I helped the students review and reflect on their learning from previous lessons

I recapped on previous learning needed for the new tasks

I presented new tasks. I assisted students in understanding the tasks when necessary. I did not provide solution methods

Assessing: I know which students had lack of instant recall of significant facts that will affect their ability to think

Teaching: I am satisfied I am competent in *Assessing* to students to find gaps in their recalled knowledge. I took appropriate teaching actions to improve the student's recall of significant facts

Teaching for Thinking

• **Noticing:** I listened to and observed students' descriptions of their solution methods without intervening to correct errors.

• **Understanding:** I am satisfied I am competent at *Noticing*. I understood the students' correct reasoning and the cause of any incorrect reasoning

• **Teaching:** I am satisfied I am competent in *Understanding* student's thinking. I took appropriate teaching actions

Teaching: I am satisfied I am competent in *Noticing* and *Understanding* student thinking. In the class or group discussion I asked a different student to explain a peer's solution method

Recording: In class or group discussions I listed all solution methods provided by students,

Teaching: I am satisfied I am competent in *Noticing* and *Understanding* student thinking. I provided more solution methods when needed

Teaching: I am satisfied I am competent in *Noticing* and *Understanding* student thinking. In discussions students or I assisted individuals in clarifying their own solution methods

Higher Level Teaching for Thinking

Teaching: I am satisfied I am competent in *Noticing* and *Understanding* student thinking. When multiple solutions exist I promote students' constructing which solution method is most efficient

Teaching: I encouraged students to create their own problems and solve them. I used this as an assessment tool to know who had understood the ideas in the lesson

Helping Individuals or Small Groups

Teaching: I assist individual students or small groups in clarifying their own solution methods

Teaching: I support individuals or small groups in private help sessions

End of Lesson

•I know what students have or have not learned in this lesson

Part B – I Focus on My Students' Learning Year 9-10 Version

I tick the boxes for knowledge/strategies before this lesson. In each selected category I answer **Yes** or **No**. I will report orally and discuss how I know what students have learned or not learned with the facilitator if there is one present.

Number

- | | | |
|---|-----|----|
| <input type="checkbox"/> I know which students do or do not have the instant recall of basic addition/subtraction facts | Yes | No |
| <input type="checkbox"/> I know which students do or do not have the instant recall of all their times tables and the associated division facts | Yes | No |
| <input type="checkbox"/> I know which students can or cannot work out remainders using basic division facts (eg $47 \div 6 = 7$ remainder 5) | Yes | No |
| <input type="checkbox"/> I know which students can or cannot recognise and model "teen" numbers (9 numbers from 11 to 19 inclusive) | Yes | No |
| <input type="checkbox"/> I know which students can or cannot recognise and model two to six-digit numbers | Yes | No |
| <input type="checkbox"/> I know which students can or cannot recognise and model seven to ten-digit numbers | Yes | No |
| <input type="checkbox"/> I know which students do or do not understand ten units must become one "superunit" in all addition and multiplication problems with whole numbers | Yes | No |
| <input type="checkbox"/> I know which students do or do not understand one unit must become ten "subunits" in all subtraction and division problems with whole numbers | Yes | No |
| <input type="checkbox"/> I know which students can or cannot recognise and model decimal fractions | Yes | No |
| <input type="checkbox"/> I know which students do or do not understand ten units must become one "superunit" in all addition and multiplication problems with decimal fractions | Yes | No |
| <input type="checkbox"/> I know which students do or do not understand one unit must become ten "subunits" in all subtraction and division problems with decimal fractions | Yes | No |
| <input type="checkbox"/> I know which students can or cannot skip count forward and backwards by 0.1, 0.01, 0.001 | Yes | No |
| <input type="checkbox"/> I know which students can or cannot name common fraction equivalents to percentages | Yes | No |
| <input type="checkbox"/> I know which students can or cannot use calculators to solve percentage calculations | Yes | No |
| <input type="checkbox"/> I know which students can or cannot use common fraction equivalents for percentages to estimate and check percentage | | |

	calculations (eg 14.9% of \$321.56: 10% of \$320 = \$32, half of \$32 is \$16, Estimate = \$48)	Yes	No
<input type="checkbox"/>	I know which students can or cannot convert the equivalent of simple fractions to decimals to percentages (eg 2 fifths = 0.4 = 40%)	Yes	No
<input type="checkbox"/>	I know which students understand and apply or do not understand percentages over 100%	Yes	No
<input type="checkbox"/>	I know which students understand or do not understand percentages of selling price and cost price are different for the same problem (eg CP = \$100, SP = \$150, %age of CP = %50, %age of SP = % $33\frac{1}{3}$ %)	Yes	No
<input type="checkbox"/>	I know which students can or cannot recognise and model simple fractions	Yes	No
<input type="checkbox"/>	I know which students can or cannot recognise and model mixed fractions	Yes	No
<input type="checkbox"/>	I know which students can or cannot convert mixed fractions to common fractions and vice-versa	Yes	No
<input type="checkbox"/>	I know which students do or do not have know their times tables and the divisibility rules for 2, 3, 4, 5, 9, 10 which enables them to find the highest common factor for a pair of numbers	Yes	No
<input type="checkbox"/>	I know which students can or cannot have convert fractions to the simplest equivalent fractions and vice-versa using common factor knowledge	Yes	No
Algebra in Number			
<input type="checkbox"/>	I know which students can or or cannot add and subtract mentally using early part-whole reasoning (typically involving a two digit number and a single digit number)	Yes	No
<input type="checkbox"/>	I know which students can or or cannot extend early part-whole reasoning to algebraic generalisations in words and using letters	Yes	No
<input type="checkbox"/>	I know which students can or or cannot add and subtract mentally using advanced additive part-whole reasoning (typically involving two or more multidigit numbers)	Yes	No
<input type="checkbox"/>	I know which students can or or cannot extend advanced additive part-whole reasoning to algebraic generalisations in words and using letters	Yes	No
<input type="checkbox"/>	I know which students can or cannot solve mentally advanced multiplicative problems	Yes	No
<input type="checkbox"/>	I know which students can or cannot extend advanced multiplicative reasoning to algebraic generalisations in words and using letters	Yes	No

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|--------------------------|--|-----|----|
| <input type="checkbox"/> | I know which students can or cannot solve mentally advanced proportional problems | Yes | No |
| <input type="checkbox"/> | I know which students can or cannot extend advanced proportional reasoning to algebraic generalisations in words and using letters | Yes | No |

Teaching Model

- | | | | |
|--------------------------|--|-----|----|
| <input type="checkbox"/> | I know which students do or do not find solutions using materials but not by using imaging | Yes | No |
| <input type="checkbox"/> | I know which students do or do not find solutions by imaging but not by number properties | Yes | No |
| <input type="checkbox"/> | I know which students do or do not by using number properties | Yes | No |

Teaching Objectives Not on Previous List

I write my objectives for the lesson in the boxes before the lesson.

I know which students can or cannot:

Yes No

I know which students can or cannot:

Yes No

Part C – I Focus on Classroom Management

I need to ring **Yes** or **No**. If I ring **Yes** I am claiming that this aspect was appropriate to allow learning to take place. If I ring **No** I am claiming that the lack of this aspect significantly reduced the potential for learning.

I understand that not all aspects will be commented on in any one lesson.

Classroom Management

I had routines for managing different student abilities	Yes	No	NA
The students knew the consequences of their behaviour	Yes	No	NA
When a student's behaviour affected his/her or other's learning I consistently took appropriate action	Yes	No	NA
I gained student attention quickly	Yes	No	NA
The students gained my attention quickly when needed	Yes	No	NA
I regularly scanned the room	Yes	No	NA
The students settled to work quickly	Yes	No	NA
During teaching one person, including me, spoke at a time	Yes	No	NA
The students knew what the next thing they have to do is and they do it	Yes	No	NA
The students were on-task when working independently	Yes	No	NA
During independent work student talk among each other was about the mathematics in the lesson	Yes	No	NA
During independent work the level of noise was appropriate	Yes	No	NA

Part D - I Focus on My Planning for Future Lessons

I select up to *four* teaching behaviours from Part A for the next lesson. I can continue practising previously selected behaviours from Part A or select new behaviours.

I found my personal understanding of the teaching ideas in the lesson was appropriate to allow for effective learning. Yes No
If my answer is **No** my source of support in this area will be:

The classroom management and climate in the lesson were appropriate to allow for effective learning. Yes No
If my answer is **No** my source of support in this area will be:

Planning for Future Lessons

As a result of noticing students' actions and words, interpreting these, and taking appropriate teaching actions in this lesson this is my plan for future teaching: