

Tutor Training Workshop

Working with Students: Explaining, Listening, Questioning Skills

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Introduction

As a maths tutor your role includes:

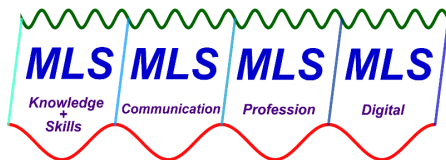
- Providing one to few instruction in maths for another student.
- Students may also work together in small groups to solve maths problems.
- Expected to use your maths knowledge to teach key concepts and guide students towards correct solutions and understanding.

Workshop - Main Points

- Digital Badges
- Teaching vs. Telling
- Explaining - Key Skills in Explaining
- Questioning - Question types for:
 - Review, comprehension, subtle hints, deeper reasoning
- Working with the Students - Some Positive Tutor Strategies

Digital Badges

10 of our tutors have been awarded with the digital badge “MLS Knowledge and Skills”!!!!



Today you have the opportunity to earn the badge “MLS Communication”.

What's involved? ... We'll get back to this later 😊

Teaching vs. Telling

- **Developing** knowledge as opposed to **delivering** it.
- Assessing gaps in learner's knowledge.
- Involves skills such as **explaining**, **questioning**, **assessment** and **feedback**.
- Use and apply your subject matter knowledge. Transform this knowledge in creative ways to teach the student.

Explaining

- Explanations are statements that convey information with the goal of making some ideas clear and comprehensible and are one of the primary ways in which tutors teach their students.
- Don't be afraid to **PAUSE** to allow time to think about the best way to explain before starting the explanation.
- Use verbal explanations to communicate key ideas, principles, and relationships and to correct student mistakes and misconceptions.
- Always have rough work paper to hand.

Explaining

- Explanations may involve a variety of elements such as summarizing main ideas, examples, analogies, and so on, and can be used to share known information (e.g. a formula) or make sense of new information (e.g. interpreting the results).
- Tutors and students may also interact over successive turns to gradually develop students' knowledge and explanations.
- Iterate through 'mind sized bites'.

Key Skills in Explaining

- When explaining, tutors must transform their prior knowledge into instructive messages that are relevant, coherent, complete, and accurate.
- This takes time and much practice to develop!
- Your explanations must make sense and be logical.
- Don't be afraid of silence **PAUSE** to think before explaining and also don't jump into help a student with their answer too quickly.

Alignment of Explanations

- In the first instance try to align your way of explaining of a particular technique with the way students have been shown in lectures.
- Then it may be necessary/advantageous to offer different approach to the same technique to aid student understanding.

Listening Skills

- Ideally tutor is trying to **scaffold the learning** for the student.
- Active listening is key to this (see *Handout on Listening Skills*).
- Good technique is to use a *talk aloud protocol*:
The student does the problem with a spoken explanation of what they are doing so that you can gain some insight into how the student is thinking and processing the problem.
- Ideally want to become the 'guide on the side' rather than the 'sage on the stage'.

Exercise On Listening Skills



- *Equation of a line*
- Pairs: one student, one tutor
- **Think of explaining and listening!**

Questioning Skills

- Questioning, which refers to both asking and answering questions, is another important tutoring activity.
- Tutors ask questions to introduce topics and to guide and assess students thinking.
- Similarly, tutors must respond to student requests for information or clarification and to students' expressed confusion.

Questioning

- Tutors may use a variety of question types such as:
 - **Review** questions to introduce topics and activate prior knowledge.
 - **Comprehension** questions to assess student understanding.
 - To provide **subtle hints** such as asking “What about the numerator?” instead of simply telling the student that the answer is incomplete.
 - Stimulate **deeper reasoning** by asking questions about underlying principles or hypothetical situations (e.g. “What would happen if the denominator was zero?”).

Questioning

- Tutors' questions are different from the information-seeking that are the usual focus of student questioning.
- Student questioning generally follows a pattern in which the student recognizes a contradiction, a lack of information, or otherwise experiences a gap in understanding.
- Questioning is most beneficial when students ask deeper questions that require integration of new and prior knowledge as opposed to yes/no verification questions.
- Always encourage students to ask questions.

Questioning

- Asking and re-directing questions
 - **Redirecting** questions;
 - **Open-ended** questions;
 - **Socratic (guiding)** questions;
 - **Probing** questions;
 - **Clarification** questions;
 - Questions **to improve critical awareness**;
 - Questions **which encourage students to re-focus**;
 - **Taking stock** questions.

(See additional Handout for examples.)

Questioning Skills Exercise



- *Simultaneous Equations*
- Pairs: one student, one tutor
- **Think of questioning!**

Questioning recap – tutor aspects

- Tutors should construct questions to help students to think deeply about material, not just the processes involved.
- To generate integration and reasoning questions, tutors may have to reflect upon the fundamental ideas, relationships, and principles needed to produce a correct answer.

Discuss examples of the key ideas in:

- solving equations, finding the inverse of a matrix, using formulae
- Important to note that tutors' knowledge may contain gaps and misconceptions because of having imperfectly learned the material.

Working with the Students



- Greeting the student in a positive way is crucial, particularly when they are seeking MLS for the first time.
 - Say hello, smile and make eye contact.
 - Introduce yourself and ask them their name.
- Sit down situation.
- One-on-one tuition or small group work.
- Try not to undermine the lecturers.

Working with the Students

- Showing you're not perfect

It is ok for students to see that you are not the font of all mathematical knowledge so don't 'waffle' if you don't know the answer.

- Maths is a process

Try to encourage students to attempt a few things and not to leave the page – and to see that doing a maths problem is a process. In fact, if they can see that **mistakes** can be used as simply things that have to be **turned into retakes**, the students will be well on the road to having the confidence to work mathematically on their own.

Working with the Students



- Allow them to ask you questions.
- Don't be afraid of silence!
- Leave them work on their own if that is what they want—they will approach you if they have any difficulties.
- Have patience and understanding— what appears 'easy' to you may not be the case for them.
- Be friendly, approachable and non-confrontational.

Working with the Students



- Don't pressure them – encourage a good work ethic.
- Use praise– build the student's self-confidence. However only praise correct work/thinking, don't encourage bad practices. **PRAISE the EFFORT**.
- If unsure of the material ask another tutor, consult resources or tell the student that you will find out for the following week. Don't give the student the wrong information.

Some Positive Tutor Strategies

- Know students by name.
- Ask questions for discussion.
- Pick up and follow student responses.
- Closure on student questions.
(*"Are you happy to move on?"*, *"Will we move on?"*)
- Reward good thinking.
- Use simple language and concepts.
- Find out what the student does and does not understand.

Some Positive Tutor Strategies

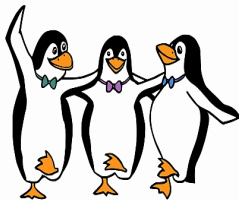
- Pass understanding, not quantity.
- Localise problem area.
(Eg. *"I don't get equations"* – narrow it down by questioning and go for small successes.)
- Establish an environment where the student feels comfortable to ask questions and look for help.
- Use explanation as opposed to telling.
- Praise students for what they have done.

Know the Resources in Place

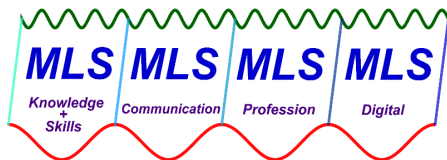
- Location of maths support and other support centres;
- Maths and statistics textbooks available in the centre;
- Online resources.

Positive Outcomes for You

- New challenge for you.
- Enhances career prospects – prospective employers see work helping others as a desirable attribute.
- Training provided.
- Personal development.
- Enhances Patience & perseverance!
- Working in a very nice team



Back to Digital Badges



To earn the third badge “MLS Communication” you are expected to

- Complete a workshop on techniques to enhance student learning in mathematics;
- Write a one-page summary (essay or bullet points or mind map) of key items learnt;
- Find and review an academic paper on MLS. ;
- Providing evidence of engaging in an MLS community.