Mapping new routes for maths

Centres for Excellence in Maths pinpoint sector support

A ‘can do’ strategy to deal with ‘can’t do maths’ problems

Making the best use of technology

Targeted help points the way to help learners
The importance of supporting learners with their maths skills is undisputed and the government’s commitment to elements of this is underlined by the recent announcement of additional funding. Passing maths qualifications provides a passport to employment and further study. But fundamentally, supporting learners to understand and work with numbers is about helping people develop core skills they need to live well and thrive in our society.

The challenges surrounding people in post-16 education to develop their maths skills are well-documented, whether in basic skills for adults, Functional Skills or GCSE resits. The challenges are complex, and GCSE results aren’t where we might perhaps want them to be. But the skills, enthusiasm and creativity of practitioners across the sector who have taken on this task are substantial and should never be underestimated.

The Education and Training Foundation (ETF) delivers a comprehensive support offer for maths practitioners underpinned by the Professional Standards for Teachers and Trainers. This covers areas including Functional Skills, GCSE resits, support for assessment, and how to embed maths in vocational provision effectively. It includes collaborative projects and networks where people can work together on some of the thornier issues. There are also opportunities for more in-depth research.

Development of the offer is based on need and evolves over time. For example, we are in the process of developing a resource to embed maths and English skills in provision for learners with special educational needs and disabilities.

We also manage the Centres for Excellence in Maths programme and work with the 21 Centres and expert delivery partners. More information about this is provided in the article on page 6 by Paul Kessell-Holland. Each Centre is forming its own network and disseminating its findings and resources to support new and improved ways of teaching maths within their region. It is perhaps helpful to consider the continuing professional development (CPD) available in the context of professional progression as well as development. Together with the benefits of the Society for Education and Training (SET) membership, the support offered can help you not only become a more reflective, proficient practitioner but to progress through to the next stages of your career.

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RESIT STUDENTS NEED TO HAVE FIRST-CLASS TEACHING

The FE and skills sector has a unique challenge to help learners arriving at college after failing GCSE maths. And the ETF is there to help. By Imke Djouadj

CSE results day had a personal feel for me this year. I experienced the worry many young people and their parents and carers go through when opening the results envelope and searching for that all-important maths grade. Did they make a ‘C’? What will happen if they didn’t and what are the options? Is their life crumbling around them already?

My 16-year-old son and his friends live in a world of rapid change. Maths, digital skills and the ability to understand and analyse data are critical to make sound judgments in all areas of life and work, including the intricacies of politics and future career planning. Making informed decisions relies on the ability to understand the complexities around us, and mathematical thinking can help to develop a way of looking at ideas, stripping them down to their essentials, and then analysing the underlying patterns.

The post-16 FE and skills sector has the unique challenge to provide first-class maths provision to students who may have failed their GCSEs at school but are motivated to start their life at college and their future career path – just not maths again.

The Tuition and Training Foundation (ETF) aims to support teachers and trainers working with resit students, to explore engaging and motivating teaching that involve learners and lead to improved results. The ETF’s course offer has changed over the years to respond to the changing landscape with newly reformed Functional Skills, T Levels and the successful Centres for Excellence in Maths programme. Courses and online provision are flexible and can be designed to your and your colleagues’ needs.

Our team of Regional Specialist Leads provide expert local support across England to explore your challenges and opportunities with you. We also offer the opportunity to get involved in collaborative practice events like our Outstanding Teaching Learning and Assessment (OTLA) and Professional Exchange Programmes.

The ETF’s stated vision is to support the FE sector to succeed through reform and change, and to lead professional development for teachers, trainers, leaders and governors. I see maths (and English) delivery as an integral part of the sector’s achievement strategy. The combination of inclusive, robust leadership, professionalism and excellent maths (and English) provision is a strong measure of success.

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CASE STUDY
BURY AND TRAFFORD COLLEGE

The project team at Bury and Trafford College recognised that the non-calculator test in the reformed Level 1 Functional Skills in maths would place an even greater emphasis on learners’ problem-solving skills.

This was an area they recognised that their students struggled with, being put off by multiple-step questions. In response they decided to test whether the use of puzzles and games could help learners develop their skills and resilience in an engaging way.

They piloted a number of card (Timetable Snap and Fraction Action) and paper-based (Sudoku, Hanjie and Suguru) games in their sessions. Students were initially slow to engage with the games and wary of doing childish activities. But once students became familiar with the games, tutors saw a growth in confidence, peer-to-peer support and engagement. The test run was so successful that, from now on, every Functional Skills maths scheme of work will include some form of puzzles or games.

The case study is one of the Outstanding Teaching Learning and Assessment (OTLA) projects funded by the Education and Training Foundation (ETF). This project was managed and supported by Creative Education, a training and consultancy agency providing services for education and training providers.

REFERENCES


By Imke Djouadj

Imke Djouadj is head of programmes for maths and English at the Education and Training Foundation.

‘ADAPTIVE PEDAGOGY’ MATCHES MATHS LEARNING WITH STUDENTS’ EXPERIENCES

Building maths teaching around learners’ needs and experiences, not ‘one size fits all’, is the key to a different approach to classes. By Diane Dalby and Andrew Noyes

The nuffield-funded Mathematics in Further Education Colleges (MfE) project is investigating how a complex set of factors influence students’ progression with mathematics in FE colleges and their outcomes. In a survey (issue 35, spring 2019) we reported survey data on the maths teacher workforce’s characteristics. Here we draw on 30 case studies of FE colleges, informed by 250 staff interviews and focus groups with nearly 500 students, to examine the distinctive pedagogy of FE mathematics teaching.

Our analysis highlights distinctive challenges in FE mathematics teaching, particularly in comparison to secondary schools. A major focus is motivation, given that the GCSE maths results of many students already classify them as ‘failed’. The need for contrasting learning experiences is clear in our case studies and from previous research (Dalby and Noyes, 2016; Highton et al., 2017).

We identify three key characteristics of the student cohort that need consideration:

• a high proportion of disengaged students with social and emotional issues concerning mathematics;
• highly variable levels of prior knowledge, even within a single class;
• differences in students’ perspectives between vocational pathways.

Teachers report how they make considerable adjustments to their pedagogy for different groups because what works for one does not work for another. This challenge is at the heart of what we term adaptive pedagogy (AP), a key feature of FE maths teaching.

Adaptive pedagogy
Adaptive pedagogy (AP) strives to align maths learning with students’ experiences, learning histories, values and pedagogies. Levels of heterogeneity in maths classes can make this particularly challenging.

Adaptive pedagogy blends together aspects of differentiation (1-2) with pathways-specific adaptations (3-5):

1. Offering alternative methods and explanations of maths processes to suit individual students.
2. Differentiating tasks to suit different levels of knowledge with a group.
3. Contextualising in different ways to match students’ interests or vocational pathways.
4. Connecting to mathematics that is naturally embedded elsewhere in the study programme.
5. Aligning mathematics teaching to signature pedagogies used in vocational pathways.

These distinctive elements of adaptive pedagogy arise from the uniqueness of the learning situation, where maths is still commonly perceived as an ‘add on’ to the study programme and students’ learning histories vary considerably. Effective teachers monitor progress and adapt approaches, but wide variations in students’ prior experiences and understanding, even within one class, make this central to FE maths teaching.

Tasks are also adapted into different contexts to aid conceptual understanding and teachers incorporate meaningful connections, where possible, to mathematics encountered in study programmes or students’ life experiences.

Occupational values and signature pedagogies (e.g. project-based learning, teamwork or active practical approaches) are less well understood but are common reasons why teachers find themselves adapting their approach for different vocational groups. Adaptation is a distinctive and practically important, feature of teaching mathematics in FE.

Implications for training and CPD
An adaptive pedagogy demands:

1. Creative and innovative design skills to offer alternative explanations and tasks.
2. Understanding of key features of vocational learning pathways, e.g. values, content, signature pedagogy.
3. Skills in contextualising resources and connecting to students’ vocational or life interests.
4. The ability to know and understand the needs of different students.

These distinct features of adaptive pedagogy should build capacity for adaptive pedagogy and ongoing CPD should also be more attentive to these demands.

Diane Dalby is a senior research fellow at the University of Nottingham. She previously worked in FE for over 20 years, firstly as a mathematics teacher and later as a senior college manager.

Andrew Noyes was a teacher of mathematics and later worked in FE at the University of Nottingham. He chairs the Joint Mathematical Council of the UK and the Royal Society’s post-16 maths group.
A ‘CAN DO’ APPROACH TO THE ‘CAN’T DO MATHS’ PROBLEM

Every learner can succeed at maths – that’s the starting point of maths mastery. So how can it help bring along students of all abilities? By Laura Shenker

Teaching for mastery is to teach with the highest expectations for all learners, regardless of their background. Mastery emphasises the importance of deepening students’ understanding of a subject, so it is secure enough to allow them to critically engage with new content areas and apply their prior learning to develop their understanding.

Dr Helen Drury, executive director of Mathematics Mastery, defines knowing you’ve mastered something in mathematics as “...being able to apply it to a totally new problem in an unfamiliar situation”. Mathematics Mastery, a programme that supports more than 175,000 teachers in over 540 schools in the UK, uses the mastery approach throughout its all-stages and across different domains and settings to meet the needs of their students, wherever they are in their journey.

The approach is founded on core mastery principles: conceptual understanding, mathematical thinking, and language and communication. Each of these is linked to strengthening understanding, mathematical thinking, and mastery principles: conceptual understanding, mathematical thinking, and language and communication. Each of these is linked to strengthening understanding, mathematical thinking, and language and communication.

Conceptual understanding

Through using objects and pictures (consider what suits the needs of your students) to represent abstract mathematical concepts and ideas, students can solidify their understanding of different domains.

These practical representations of mathematical concepts allow students to experience the concept before simply copying it down, ensuring they understand the maths behind the mathematical expressions they write. Using different methods also allows students to make connections between different areas of mathematics, deepening their understanding.

By asking students questions such as “what’s the same and what’s different?”, with different representations displayed or accessible to them, teachers can facilitate their learners to spot patterns and make connections.

Students can continue to build on these patterns and connections as they progress through new content areas.

Mathematical thinking

Mathematical thinking is equally important to supporting students to become resilient problem-solvers. Teachers and trainers should encourage students to question in the classroom where all students feel they can succeed.

By Rachel McLeod

The opportunity to participate in the Education and Training Foundation’s (ETF) Teaching for Mastery pilot came at an ideal time for New City College. Reflecting on our journey, there was a mixture of change and excitement. A whole new set of skills, and on using concrete and pictorial resources to help make the connections between aspects of the curriculum that students might see as unrelated – for example, fruit ions, decimals, percentages, and ratios. We also included lots of examples of problem-solving questions and those that encourage reasoning skills. Support and ideas from the amazing ETF maths lead, Rachel McLeod, helped us think about the sequencing around it and what it will look like for your learners.

Variation really helps develop a concept. Use examples that change one thing.

Bounce ideas off colleagues or a friendly ETF maths lead.

In particular, brief the learning support staff.

Find something good and put your effort into thinking about the sequencing around it and what it will look like for your learners.

The next stage comprised two main strands. First, planning delivery for particular trial groups and, second, the structures that needed to be in place in the college to support the changed delivery.

We gave our trial groups a different scheme of work, with more emphasis on developing numerical reasoning skills, and on using concrete and pictorial resources to help make the connections between aspects of the curriculum that students might see as unrelated – for example, fruit ions, decimals, percentages, and ratios. We also included lots of examples of problem-solving questions and those that encourage reasoning skills. Support and ideas from the amazing ETF Regional Maths Lead and from the local maths hub helped us think about the sequencing around it and what it will look like for your learners.

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Find something good and put your effort into thinking about the sequencing around it and what it will look like for your learners.
Further education is rising to the complex challenge of supporting learners who may have a long history of failure at maths. Paul Kessell-Holland examines the aims of the CfEM programme.

In May 2018 the Department for Education issued a call to colleges across the country, asking if they wanted to be nominated as Centres for Excellence in Mathematics (CfEM).

The Centres were to be directly funded via the Education and Skills Funding Agency (ESFA) for a period of up to five years, and work locally with network partners and nationally with an overarching delivery partner. This signalled a major programme to understand the challenges faced by students, teachers and providers in developing their maths skills at Level 2. While one of the drivers of this programme has always been related to the GCSE condition of funding, the programme is also a wider attempt to explore ‘what works’, or more importantly ‘what works here’, for learners on any programme of maths study at Level 2 and below.

Subsequently the 21 Centres were chosen (see opposite page), and the Education and Training Foundation (ETF) was appointed as the national delivery partner. We were charged, alongside our expert delivery partners, with supporting the individual colleges to become a national group carrying out research and developing knowledge for the whole sector.

The Centres’ work is defined by four major thematic areas: use of maths mastery; contextualisation of maths; major thematic areas: use of maths and technology and data. The Centres were to be directly funded by students, teachers and providers and methods in their previous learning experience.

As such, the CfEM programme attempts to look at the issues facing maths learners in colleges in as holistic a way as possible.

There will never be a one-size solution to such a thorny issue – what is successful for some groups of learners will not suit others. Teachers need to be agile and well-informed, with a range of techniques and methods at their disposal. They need to have access to the most up-to-date research on what seems to be effective in other settings – ideally similar to their own classroom.

They also must have the ability to think critically about their own teaching and be responsive enough to recognise when what they are doing for one group or individual needs to change for another.

Leaders at subject and provider level need to understand what factors are affecting success for these students. Some logical timetabling or resource management decisions that have been taken might be accidentally impacting student attainment. There may be simple changes they could make to ‘undo’ this damage. It is important for leadership across the organisation to know what is likely to be most positive for their learners – and ideally for as many different groups of them as possible. This includes the most effective diagnostic methods, enrolment processes and a host of other day-to-day approaches to delivering ‘additional subjects’ such as maths.

The CfEM programme cannot on its own solve the challenges that face providers, teachers and students working to improve maths skills. However, the step change being sought is matched with a step change in approach – a significant input of funding over a longer period of time, a focus early on in the programme on use of evidence from across the sector and beyond, and national trials to test potentially helpful approaches, are all quite different to previous attempts to ‘shift the dial’ for GCSE maths ret students.

Already several hundred teachers have benefited from training, network and collaboration opportunities. Leaders from the Centres have received support and CPD, and meet regularly as a national group with a common purpose. New research and analysis have already been brought to bear to help design the content and focus of the national trials, and there are due to start in late October this year.

It is early in a long-haul voyage of discovery, but the signs are promising.

In time, this local-facing CPD will be joined by training based on the outputs of the trials and action research, trying to quantify the most effective lessons learnt to date in an accessible way for all maths teachers. Any teacher or leader of maths who has not yet benefited from training, network and analysis have already contributed and learning are an inspiration. Success has many ways of showing itself and being measured, but the first year of the CfEM programme has already had its fair share.

For further information on the Centres and delivery partners, click on the ‘Centres for Excellence in Maths’ link on the ETF website home page or go to: etfoundation.co.uk/cfem

The 21 CENTRES

East Midlands
• New College Stamford
• Leicester College
East of England
• Cambridge Regional College
• Harlow College
London
• Newham College of Further Education
• Leyton Sixth Form College
North East
• Gateshead College
North West
• Lakes College West Cumbria
• Tameside College
• Nelson and Colne College
South East
• Fareham College
• Greater Brighton Metropolitan College
• East Kent College
South West
• Weston College of Further and Higher Education
• City College Plymouth
West Midlands
• Warwickshire College Group
• Newcastle and Stafford Colleges Group
Yorkshire and The Humber
• Grimsby Institute of Further and Higher Education
• Leeds City College
• Wilberforce Sixth Form College

Paul Kessell-Holland is director of insights at the ETF.
The Centres for Excellence in Maths (CFEM) programme has all selected the themes on which they will focus their activities.

The CFEM programme aims to deliver a step change in maths teaching up to Level 2 in post-16 settings, with a focus on 16 to 19-year-olds. It is funded by the Department for Education (DfE), which has chosen the Education and Training Foundation (ETF), the national workforce development body for the further education and training sector, to manage and lead this programme.

The ETF is working with a range of expert delivery partners and the 21 Centres to design new and improved teaching approaches, develop quality teaching resources, build teachers’ skills and spread best practice across the country through maths networks. This is to help increase the number of young people leaving compulsory education with the necessary maths skills up to Level 2.

The theme each Centre will focus on is:

1. **Contextualisation**
   - Cambridge Regional College
   - East Kent College
   - Gateshead College
   - Grimsby College
   - Harlow College
   - Lakes College
   - Nelson and Colne College
   - Newcastle and Stafford Colleges Group
   - Tameside College
   - Warwickshire College Group
   - Weston College

2. **Mastery**
   - East Kent College
   - Chesham Sixth Form College
   - Fareham College
   - Greater Brighton Metropolitan College
   - Leyton Sixth Form College
   - Nelson and Colne College
   - Newham College
   - New College Stamford
   - Wilberforce Sixth Form College
   - Leicester College

3. **Data and Technology**
   - Cambridge Regional College
   - City College Plymouth
   - Harlow College
   - Lakes College
   - Leeds City College
   - Newcastle and Stafford Colleges Group
   - New College Stamford
   - Tameside College
   - Leigh College
   - Greater Brighton Metropolitan College

The use of digital technologies refers to computing devices such as laptops, notebooks and smartphones as well as calculators. It also includes software, such as graphical and spreadsheet applications. Technology can be used to visualise mathematical relationships, plot changes quickly, and automate and speed up mathematical processes. This can help students understand underlying patterns and relationships more easily.

The ET is excited to be working with the 21 Centres for Excellence in Maths and our chosen delivery partners to achieve this objective.”

For more information on the CFEM programme and its themes visit the ETF’s website.

The Centres for Excellence in Maths (CFEM) programme was made up of the EdExcel cloud-based platform which offers automated formative assessment mapped to the GCSE maths specification. Diagnostic questions help to identify misconceptions, can provide real-time insights for teachers and policy makers, and support students to progress independently. Quizzes are used immediately after teaching a topic to identify misconceptions and then, three weeks later, to measure retention.

A provider’s ability to collect, aggregate and analyse data about student characteristics and performance is much enhanced by technology and can provide a very rich information base to inform teaching.

By Eddie Playfair

Technology can be a good ally for teachers and students alike if it’s used creatively and imaginatively to keep maths learners motivated.

The Centres for Excellence in Maths (CFEM) programme has chosen the Education and Training Foundation (ETF), the national workforce development body for the FE sector, to manage and lead this programme. The ETF is working with a range of expert delivery partners and the 21 Centres to design new and improved teaching approaches, develop quality teaching resources, build teachers’ skills and spread best practice across the country through maths networks. This is to help increase the number of young people leaving compulsory education with the necessary maths skills up to Level 2.
TEACHING APPROACHES

T LEVELS: ON THE BOUNDARY BETWEEN SCHOOL AND WORK

The new exams provide a big challenge for students so they can cross the frontier into a job with good maths skills. Help is at hand for teachers. By David Prinn

Levels are new, two-year, Level 3, technical study programmes that have been designed in collaboration with employers to give young people the skills that industry needs. They will provide an alternative to existing qualifications and programmes including apprenticeships and A Levels. Unlike apprenticeships, the T levels will be mainly classroom-based, but they will include a mandatory industry placement of at least 315 hours in the students chosen industry or occupation. The first T Levels will start in September 2020. T Levels have a separate exit requirement that learners must have achieved a Level 2 qualification (Functional Skills or GCSE) in maths while English.

A frequently heard comment from employers was that “too many young people have only learned to answer the sort of questions that are set on GCSE papers” (ACME, 2011, p.1). The maths required in work is very different from what they learn at school. Maths in the workplace can be described as ‘complex maths in simple situations’, whereas work maths is often ‘simple maths in complex situations’. Employers value young people’s ability to apply maths, including modelling and problem-solving skills. The use of computers in the workplace has become almost ubiquitous. This has changed, but not reduced, the mathematical skills required. The term ‘techno-mathematical literacies’ was coined by Hoyles et al (2007) to describe the fusion of IT, maths and workplace-specific skills required. T Levels will operate on the boundary between school and work, and the transfer of knowledge from one domain to another is often problematic.

Some development of occupation-specific, techno-mathematical literacies will be required to assist learners in crossing the boundary, and technical specialists will need to be adept at identifying the maths (and English and digital) skills required in the context. To define the skills required, ACME (2019) is developing a set of General Mathematical Competences (GMCs). The GMCs will be sufficiently general to apply in most workplace situations, organise a substantial body of mathematical knowledge, emphasise the use of mathematical models, and ensure experience of using appropriate technologies to reflect how maths is used in the workplace.

To explore some of these ideas, ODP courses, aimed at technical specialists, are being delivered on behalf of the Education and Training Foundation (ETF) by Claire Collins Consultancy and the West Midlands Centre for Excellence in Teaching Mathematics (WMCETT). For details on ETF support and courses visit bit.ly/EPDMathsandEnglish.

Both of these are examples of the same underlying mathematical idea, yet the solutions will very often be modelled differently. To a student, they can appear as two completely unrelated questions, particularly if they are taught months or years apart. So how do we make the link explicit? Well one way is to use a consistent representation. In this case something like a dual number line would be perfect:

15cm
12cm
84cm

By Peter Mattock

My one and only tip for teaching mathematics is to do it in a way that makes explicit the links within a concept, and beyond been concepts. Often, we teach methods or approaches that are good at one particular time, for one particular part of an idea, but make it harder to connect to other parts of the idea, or other ideas. Take for example the two questions below:

1. It costs 12 people £84 to go to an event. How much would it cost 15 people if the rate stays the same?
2. Find the missing length shown in the triangle below, given that the two triangles are similar.

‘exchange rate’ etc. all refer to the idea of multiplying one variable/mesasure to give a different one. The biggest tip I could give anyone for teaching maths is to make sure we teach the idea, that we know the models, and that language is consistent through the idea and its connections with other ideas.

By Terry Sharrock

Promote a positive message about maths. Recognise how often we use maths in our everyday life without noticing it. Think about crossing a road. How many calculations go into estimating the length of crossing, speed of vehicles, and the distance and speed of approaching cars, before we calculate whether we will get across in time? If you say “I only have one of them”, you’re saying “I can’t cross the road”.

Show at least as much, and preferably more, interest in the process as well as the answer. When learners answer any question involving calculations, say: ‘That’s brilliant. How did you get that answer?’ It forces them to verbalise their thinking, and others listening will learn or come up with their own way of doing it.

Give as much praise to effort as to the correct answer. Reinforce skills of resilience and perseverance, even if they don’t find an answer. Promote the feeling that maths can get better with effort. We may not be mathematical geniuses, but we can all get better.

Two simple rules in maths: you must have fun and you must make mistakes. MISTAKES = I Means I Start To Acquire Knowledge, Experience (and) Skills.

By Valeria Panyko

Teaching maths for resit classes in an FE college is a challenge. It’s a challenge that can be hugely rewarding once we open our students’ minds and interest towards the subject, and planning meaningful activities can help us to achieve this.

My experience shows that students are more likely to apply themselves when the problems are presented in smaller chunks (like cards) and they have the freedom of choice either in creating or using them. I often bring various card-based activities to my lessons, but it proved to be the most effective when my students create cards and games with their own rules. I often refer to Bloom’s Taxonomy and explain to my students that designing a high-level question and finding their answers, of course shows how competent they are in that specific topic. It not only increases their self-esteem and motivation but has the ‘fun’ factor too. My role is to make sure that the level and the content are appropriate to the level of study and that the answers on the back of the cards are correct.

Learners often create exit cards (based on what they have learned during the lesson) or revision cards. They can work in groups, in pairs or individually. The key is to bring these cards back to the lesson and to use them in various ways (for example, independent work or group discussion).

By Emma McCrea

We are all prone to forgetting. This is due to a feature of the memory called interference, the process of forgetting that occurs naturally over the passage of time. It explains why our students seem to forget what they were taught last week, last month, and last year.

To overcome this we must provide regular opportunities for them to retrieve prior learning. The easiest way to do this is to create a ‘starter’ section at the beginning of any new content that they were taught last week, last week, last month and beyond.

Use mini whiteboards as often as possible to get ‘in the moment’ feedback from students so that when we uncover that they don’t know something, we are able to fix it.

Finally give careful thought and consideration to the selection and order of the worked examples you plan to share with students during the explanation. Well-chosen examples will draw the students’ attention to the important features you wish to highlight and help them connect to their prior knowledge.

Manage cognitive load and provide scaffold by using worked example pairs and incomplete worked examples, whereby one or two steps are missing from a worked example and students must complete them.

REFERENCES

ACME (2011) Mathematical needs: Mathematics in the workplace and in higher education. London: Advisory Committee on Mathematics Education. Available at: http://www.acme-uk.org/media/6726/acme_theme_a_final%20287%29.pdf


Peter Mattock is a maths teacher and an accredited secondary maths professional development lead, who regularly presents at conferences across the country. He was a member of the first cohort of specialists trained in mastery approaches by the National Centre for Excellence in the Teaching of Mathematics (NCETM).

MEMBER OFFER

SET members can claim 30% off all the RRP of Peter’s book, Unlocking Maths: Using Representations And Structure (2nd Edition: Mathematics in Schools), when ordered directly from Crown House Publishing. Use discount code LETMO when prompted. This offer is valid until 31st December 2019.

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SET members are eligible for a 25% student discount on the 69F of Emma’s book, Making Every Maths Lesson Count, when ordered directly from Crown House Publishing. Use discount code TS2019 when prompted. The offer is valid until 31st December 2019.

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RESIT STUDENTS GIVEN TARGETED HELP THROUGH ASSESSMENT FOR LEARNING

Students failing GCSE maths now have to retake the exam within nine months, so the heat is on for teachers. But a diagnostic project that focuses on learners’ needs could point the way. By Rebecca Matthews

Following the change in policy which meant that learners who failed their GCSE maths and English continue to work towards a Level 2 qualification, one of the key things we identified at Stockton Riverside College was that none of the existing diagnostic assessments was fit for purpose. Assessing learners’ needs is critical in further education as we have only nine months to engage and support students who often do not want to continue to study maths and English at GCSE.

As those in the sector know, money and resource in this area are tight. But we were fortunate in securing additional support through the Education and Training Foundation (ETF) via its Outstanding Teaching Learning and Assessment (OTLA) programme. This resource allowed us to release staff to work with an outstanding local secondary school and other local colleges to develop better diagnostic assessments.

The aim was that these diagnostic assessments were closely linked to the assessment criteria for both GCSE maths and English. Our starting point was to ask: “What do we need to know to support the learner to achieve?”

A diagnostic was developed based on the subject assessment criteria, using previous exam questions, in a way that flagged up weaknesses in topic knowledge at learner level. This was also linked to the marking scheme and grade boundaries to establish a current ‘working at’ grade and provide an initial assessment.

Having this vital information resulted in us giving learners clear guidance and support on the topics they needed to focus on. It allowed teachers to plan and differentiate their classroom based on these outcomes.

Target setting was closely linked to assessment criteria and interim assessments were developed to track learner progress.

Reviews of teaching and learning indicated learners were more aware of their targets and we had really positive feedback from the staff involved, with many saying that the new diagnostic had given them more confidence with their outcome predictions.

Following an English project in 2015-16, preparing for the new specification’s implementation, high grade outcomes for English GCSE improved by just over 20 per cent in 2016/17, with a further improvement of five per cent in 2017/18. We continue to perform well against national benchmarks. The GCSE maths team developed their diagnostic assessments during 2017-18 and we have seen a six per cent improvement in higher grades.

If you want to find out more, I’d be delighted to discuss this further with readers – just drop me an email on rebecca.matthews@stockton.ac.uk

WHAT IS ASSESSMENT FOR LEARNING?

Assessment is essentially about informing learners of their progress to empower them to take action to further improve their performance.

All strategies should provide quality feedback to learners based on, for example, an interim assessment decision. The feedback should be individual and, by its very nature, has the facility to support weaker learners and challenge more able learners.

RESOURCES

SHAPING SUCCESS IN MATHS AND ENGLISH

The ETF offers a comprehensive range of professional development courses and resources under Shaping Success to support effective teaching of maths for teachers of GCSE Functional Skills, apprenticeships and study programmes.

Shaping Success has been carefully designed to provide solutions to concerns around progress in post-16 maths and English attainment.

Each year around 4,000 practitioners complete face-to-face, online and blended courses to improve their teaching and assessment approaches in maths and English.

Maths and English Regional Specialist Leads (see details on the facing page) support our programmes, delivering advice and guidance and identifying the best options available for organisations and individuals on a local level.

In addition to complementing Shaping Success for Maths and English, the ETF offers a range of other courses, resources and support including:

• Free online modules and self-evaluation tools to develop your personal maths or English skills at Level 2, with some extension to Level 3.
• Interactive webinars that offer the opportunity to collaborate with other practitioners, learn new strategies and share best practice. These sessions are unique learning experiences, so don’t miss out.
• I’m Too Tilt – see Excellence Gateway, bit.ly/ETFTenTopTips – provide advice and guidance to improve outcomes.
• Guidelines for assessment and tracking, co-created with the sector, detailing expectations of effective practice in assessment for learning.
• A range of tools, resources and case studies on the Excellence Gateway, our resources portal with dedicated maths and English exhibition sites.
• Resources for teaching ESL (English for Speakers of Other Languages) learners in mainstream FE classrooms as well as dedicated ESOL resources for practitioners teaching new to ESOL learners.
• Resources to support the promotion of maths and English in work experience.
• Practitioners being invited to join the ETF’s Professional Exchange Networks (PENs) to explore regional challenges and reflect on effective practice in the sector.
• Strategic visits offering organisational level support. Providers can also engage with our dedicated team of specialists to receive a maths and English strategic support visit to identify high-level areas of need.
• To discuss a strategic visit, contact imke.dpaund@etfoundation.co.uk or your local Regional Maths Lead. (See the list of contacts on the facing page.)

MEET YOUR REGIONAL MATHS SPECIALISTS

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For full information on all maths and English support visit the ETF website or, if you’re reading your inTuition English supplement digitally (available to SET members who log in), then simply click the following link:
bit.ly/CDPMathsandEnglish
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