National Centre for Excellence in the Teaching of Mathematics

The Education & Training Foundation

Health & Social Care

The Maths Pipeline:

Supporting maths in post-16 vocational provision

MEI Innovators in Mathematics Education

NIACE The National Voice for Lifelong Learning

Resources created as part of the Maths Pipeline programme.

www.et-foundation.co.uk

Developed by Mathematics in Education and Industry (MEI) and
The National Centre for Excellence in the Teaching of Mathematics (NCETM).
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Published September 2015

External references

This guide offers links to external websites and resources. At the time of publication all urls provided were correct; however, website addresses may be updated and changed. For each reference, the full name of the publication / resource has been provided to help you deal with any broken links.

www.et-foundation.co.uk

Health & Social Care

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About this guide

This guide is one of a series aimed at practitioners from a wide range of providers, including FE colleges, independent learning providers and those working in the Secure Estate, who support post-16 vocational learners to develop their maths skills up to and including Level 2.

The guides, together with films which aim to stimulate viewers to reflect on their practice, have been created as part of the Maths Pipeline Programme.

As a vocational teacher you are able to provide a practical learning environment in which learners see a real purpose for developing their maths skills, and you can demonstrate convincingly that strong maths skills underpin vocational professionalism. This guide suggests ways in which you can engage your learners' interest and support them to develop their maths skills.

Throughout the guide you will find sections encouraging you to take a look at other websites, film clips or educational research documents. These sections are identified using the icons shown below.

For an interesting website

For an interesting document

For an interesting film

The guide is one of five in a series from the Education and Training Foundation (ETF) Maths Pipeline Programme. There are four Guides aimed at vocational teachers working in

1. *Construction and the Built Environment*
2. *Health and Social Care*
3. *Hospitality and Catering*
4. *Hairdressing and Beauty Therapy*

A fifth guide, *Unlocking Maths*, is aimed at specialist maths teachers in the Secure Estate.

The guides are also supported by a collection of films; begin with the clip that introduces the series and then explore the library of films.

Why should I be concerned about developing my learners' maths skills?

Here are four good reasons:

Developing your learners' maths skills can help them progress in their vocational course

When vocational and maths teachers work together, retention and achievement rates for maths and for the vocational subject improve. See You Wouldn't Expect a Maths Teacher to Teach Plastering….

Improving your learners' maths skills increases the employment opportunities open to them.

Maths skills are highly transferable, and improving them will help a learner to become more employable, regardless of whether they stay with their current vocational area.

Maths errors can be costly to any business

Think about the wider consequences if people make mathematical errors whilst working in their chosen area of employment or self-employment. Errors can waste time and resources, can lead to dissatisfied customers, and can undermine health and safety standards.

Enhancing your professionalism

The Professional Standards (Statement 16) state that as a professional teacher or trainer you should demonstrate commitment to:

> *"Address the mathematics and English needs of learners and work creatively to overcome individual barriers to learning."*

Why use a vocational lesson to develop maths skills?

Many post-16 learners view their previous learning experiences in maths very negatively.

The prior experiences of many vocational learners mean that they may have little or no maths confidence. Making maths relevant with authentic learning activities that link to real work contexts, and highlighting where learners have used maths in your lessons have real benefits. The desire to make progress in their chosen vocation provides considerable motivation for learners to master relevant mathematical skills and concepts. Success and enjoyment in a vocational lesson means their expectations will be high. They may be more willing to persevere with challenging maths and maths that isn't directly relevant to the vocational area but is relevant to a Functional Skills or GCSE qualification they are aiming for.

In this film from the Maths Pipeline Programme, practitioners and learners talk about the benefits of embedding maths and some of the approaches they use.

This clip from the Maths Pipeline Programme, shows learners using maths as an integral part of a health and social care lesson. It demonstrates how developing mathematical understanding can help learners to engage as well as progress.

This embedding and contextualising approach is underpinned by research:

'You Wouldn't Expect a Maths Teacher to Teach Plastering…', NRDC, Nov 2006.

Effective Practices in Post-16 Vocational Maths, ETF, Dec 2014

Engaging Learners in GCSE Maths and English, NIACE, Jan 2015

Vocational Training and Employability Skills in Prisons and YOI, NIACE, May 2013

Initial Guidance for users of the professional standards, ETF, May 2014

Some teaching ideas

We've introduced a small number of teaching ideas in this section to illustrate approaches which relate maths to your vocational subject and which help learners to understand key mathematical ideas deeply.

Active learning is key; in particular, it can help learners to become aware of and resolve any mathematical misconceptions they may have. Active learning uses strategies such as group work, discussion and open questioning to encourage learners to become reflective, to think mathematically and make links between topics, instead of using memorised techniques or processes. This approach helps students to make connections between their ideas, to understand the interconnected nature of maths and confront common misconceptions and difficulties.

> *"Active learning involves providing opportunities for students to meaningfully talk and listen, write, read, and reflect on the content, ideas, issues, and concerns of an academic subject."*
> Meyers & Jones, 1993

Later sections (see page 9 onwards) describe and respond to some challenges you might face, expand on the principles and research underpinning these teaching approaches, and offer many more teaching ideas.

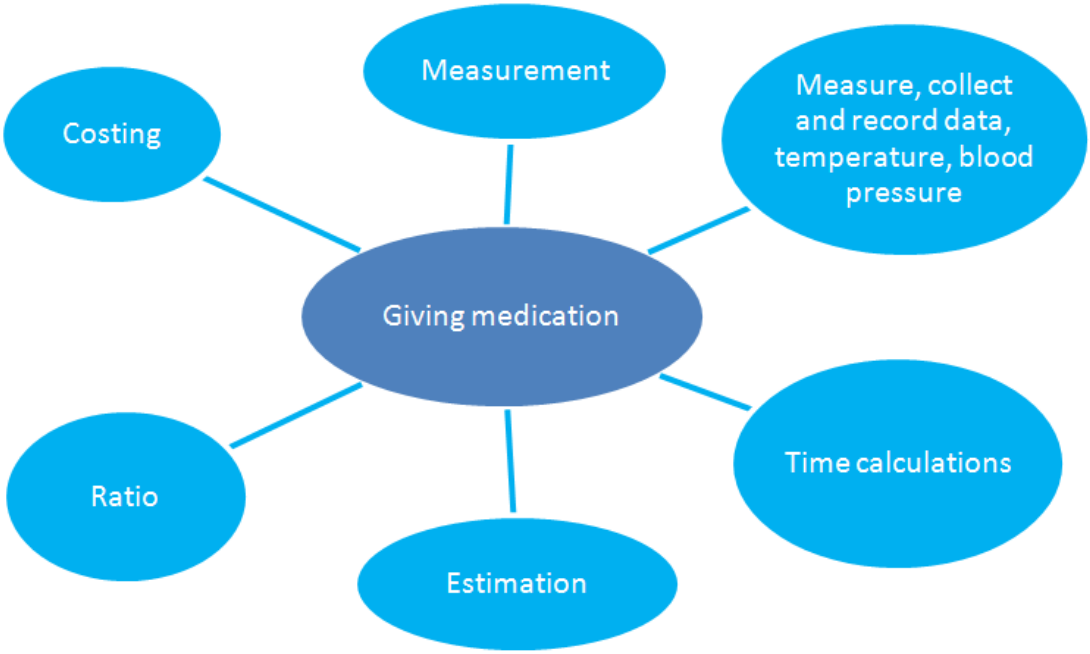
Picturing the maths in your vocational area

Start with a picture related to health and social care, one which your learners can relate to, and ask them to list some jobs/tasks that spring to mind. Then ask your learners to think about the maths they are likely to encounter when performing those tasks.

Here is one example used at a Vitaliser event, run as part of the Maths Pipeline Programme, for health and social care practitioners. You could substitute your own picture - working with a child, office admin work, serving refreshments and food, other health checks, appointments, reading charts and tables, ordering supplies, taking deliveries etc.

Tasks/Jobs

Maths which underpins one of these tasks: Giving medication



You could use the 'Picturing' activity as a starter to a more involved activity for example on making a care plan, making a decision about whether buying an item of equipment for a care home or nursery, estimation of measurements, using ratios to change a recipe, planning a layout in a day room, or childcare centre, labour rates, timesheets and tax, etc.

Another idea would be to select a photograph of a practical task the learners will be doing in a lesson you are planning. You could use the picture to discuss with learners what maths they might expect to tackle in the forthcoming lesson, and perhaps identify any mathematical areas they are likely to find difficult. This would then inform your planning and would also help the learners to realise that the maths they will tackle in that lesson is vocationally relevant.

Films would work equally well, or possibly even better than photographs, for this kind of activity.

Other learning activities related to your vocational area

The Excellence Gateway site has a set of resources on early years education covering: Working with children; Health and safety; Communicating early years; The individual child; and Providing a role model. There is an introduction and curriculum coverage document towards the bottom of the page. (Select 'Embedding numeracy in vocational contexts', then 'Vocational' and 'Early years'.)

The Excellence Gateway site also has a set of resources on social care covering: Communicating in care; Information at work; Communication for care planning; Figure it out; Develop yourself in the workplace. There is an introduction and curriculum coverage document towards the bottom of the page. (Select 'Embedding numeracy in vocational contexts', then 'Vocational' and 'Social care'.)

You can also access these resources from the search facility on the Excellence Gateway website (Search for 'early years module', or 'social care module').

The Cre8ate Maths website includes resources on Childcare and Early Years (03.), and Health and Social Care (08.). (You will need to register with Cre8ate to be able to download them, but registration is free.)

Google Earth provides a free download that allows you to get a plan view of almost anywhere in the world. As a project you could ask learners to design a playground. The learners could get an image of somewhere local that could be converted to a play area. There are measuring tools on google earth to allow you to add some scale. You could then get an online catalogue of equipment and plan where to put things. You could add an additional element with costing, ordering, VAT, etc.

Alternatively, there are many room design tools which are free to download or use online. Here is one such tool. You could ask learners to plan a room for a care home, perhaps adding a costing element as an extension.

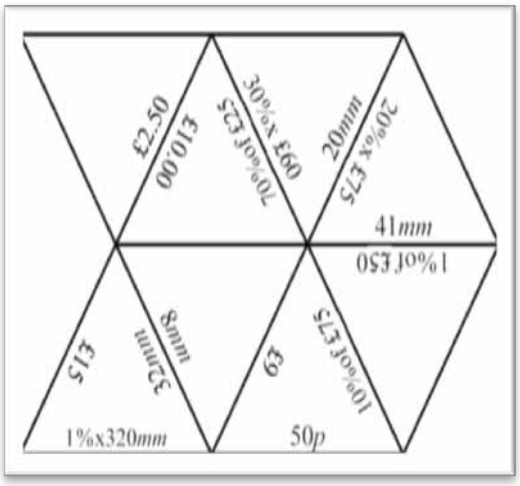
Using vocationally-oriented learning materials helps engage and maintain learners' interest; however, often you will also need to provide support so that learners develop deep understanding of essential mathematical ideas, and develop confidence in their own ability. You could use or adapt the activities below.

Examples of active learning activities that you could use or adapt with learners

Tarsia

Tarsia is free computer software which can be used to quickly produce puzzles like the examples shown below. These puzzles can be used as a lesson starter to get the learners talking about an aspect of maths they are going to encounter in your lesson, to assess your learner's knowledge of the topic and to resolve any misunderstandings or confusions.

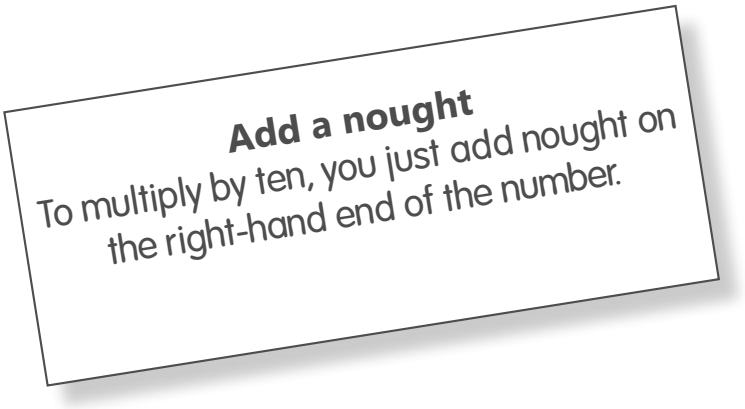
300cm	50m	0.5m	3m
250cm	300mm	4000cm	2m
2000mm	50cm	5000cm	Finish
30cm	40m	Start	2.5m



These puzzles use measurement and percentages, both of which are relevant to construction; and you can make similar puzzles of your own using other key concepts.

Sometimes true, always true, never true

This kind of activity challenges learners to think deeply about a topic, and also requires them to articulate their thinking. As they are working on the activity, listen to the arguments they are creating, and encourage them to express themselves clearly verbally and on paper; this formative assessment aspect will help identify and resolve any misconceptions.



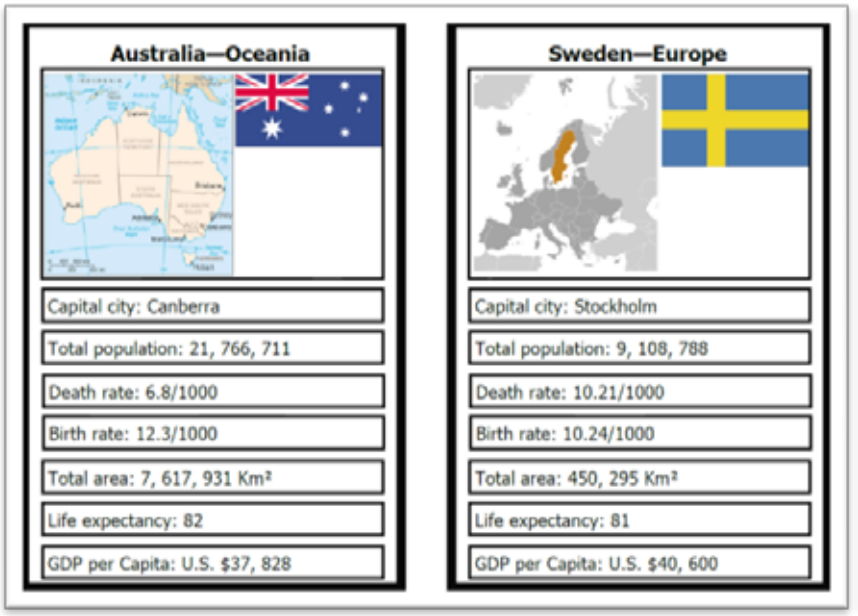
The idea is that the learners have a collection of statements which they are asked to sort into three columns. Learners may think that this is always true, but if prompted to think further they will discover that it is not true for decimals. This activity can be adapted to cover a wide range of statements.

The NCETM website section on Thinking Through Maths contains collections of statements that can be used for a 'Sometimes true, always true, never true' activity.

Top Trumps

This is an adaptation of the popular card game where players compare data on a collection of themed cards. Learners explore a range of mathematical ideas, e.g. small and large numbers, the use of ratio to create statistics like death rate and birth rate, and how statistics like death rate, population and GDP might / might not correlate; teachers can choose which ideas to emphasise. Group discussion and peer support helps learners identify and resolve any mathematical misconceptions.

In the example below the theme is countries, which learners may see as relevant to their everyday life; however, you could use information with a vocational theme for example, statistics and NHS figures about medical conditions, disabilities, SEN, facts about first aid, world health, etc.



Find a space large enough for all the learners to line up facing you. Give each learner one of the cards. Ask the group to select one of the statistics from the cards, e.g. total population. Now ask the learners to line up in order of total population, from the smallest at one end to the largest at the other end. When they have done this, ask them to read out their population statistic. Get the whole group involved in checking that everyone is in the right place in the line.

Many Top Trump sets are available as free downloads from the TES website. (Search for 'Top Trump maths'.)

Other resources to help learners understand key mathematical ideas

The WisWeb website has some excellent apps to help learners to explore maths topics including ratio, angles, and other aspects of shape. These are maths apps rather than specific vocational apps.

The Virtual Maths website provides lots of interactive activities that link maths to real life problems, including number; algebra; shapes, space and measure; and data handling.

The following sections of this Guide describe and respond to some challenges you might face, expand on the principles and research underpinning these teaching approaches, and offer many more teaching ideas.

What challenges am I likely to face?

Incorporating the development of maths skills as part of your vocational teaching is not without its challenges.

Engaging learners

Your learners may feel quite negative about the prospect of continuing to study maths as part of their vocational course, regardless of whether they are also learning maths in separate lessons. Hands-on activities relating to their vocation can help them to see the relevance of maths to their futures, and so can be very effective in engaging and motivating them.

This clip from BBC Skillswise examines why maths and English are important in health and social care.

This clip from BBC Skillswise examines why maths and English are important in early years education.

Some learners may need to improve their confidence with basic maths

One strategy which has been effective in helping with this situation is pairing struggling learners with a maths mentor from the same maths or vocational class: the examples below show how this approach is being used with learners in the Secure Estate.

This report by NIACE (page 44) explains how at HMP Chelmsford two mentors supported the tutor, resulting in an improvement in the quality of learning and work in the laundry.

The Maths4Prisons Maths Mentor Handbook describes the Prison 'Maths Mentors' project and includes a link to resources designed for mentors, together with resources which prison staff can use to train 'Maths Mentors'. The primary purpose of the booklets is to support mentors to work with other prisoners on the wing, in maths classrooms or in industrial workshops.

"I feel as though I am good at maths and would like to pass on any help that I can. The guys know who I am and come and see me on the wing."
Mentor at HMP Littlehey.

This peer mentoring scheme is discussed in a film about teaching and learning in the Secure Estate in England.

When learners help each other they reinforce their own knowledge and build their confidence; this also allows you to spend more time with the learners who need extra support. Often if these partnerships start in the classroom they are continued outside the classroom with learners supporting each other outside of lesson time. In the Secure Estate the reverse is often also true; mentors working on the wing often encourage and support other prisoners towards and in the classroom.

Difficult topics

There may be specific mathematical topics which, from experience, you know learners will find difficult. Below are some suggestions of resources to support learners in some of these areas.

Maths4life is a series of booklets providing teaching materials for a variety of topics, including number, time and money, fractions, measurements. (You will need to register with NCETM and set up a free account.)

Maths Everywhere has some excellent short clips to help learners develop their maths skills. The site has three sections; some tools to help with everyday maths (e.g. currency conversion and planning journeys); a set of 'how to do' short clips; and some interactive questions to try. It is also available as an app.

The Skills Workshop is a site where practitioners can upload their own resources. It provides a range of lesson ideas covering many aspects of maths and English. The resources can be filtered by vocational area and level. Look out particularly for the resources which use active learning.

The Excellence Gateway has a large collection of numeracy and vocational learning materials, and the Maths Exhibition website brings together some of the most effective maths teaching and learning materials from this site.

Working in the Secure Estate

If you are working within the Secure Estate you will have additional challenges such as regime constraints and learners who have additional support needs. The following is an approach taken by one prison:

> *"At HMP Wakefield, teachers provide contextualised learning within prison industries on a one-to-one basis to help learners who are in the separation unit and/or those who struggle with functional skills or have additional learning needs. This type of support is proven to be less disruptive to the prison day and effective at engaging those furthest away from learning and skills."*
> NIACE

This clip shows ways in which learning has been embedded in many aspects of prison life at HMP Swalesdale, and this article discussed how literacy and numeracy have been embedded in the gym there. Similar ideas could work in health and social care.

You might get some further ideas from the report Fit for Release, which discusses ways of helping prisoners prepare for life outside the prison.

This clip introduces the Offender Teaching and Learning (Vocational Training) Toolkit, and this clip covers the maths content of the toolkit. Related materials are available on the Offender Learning Exhibition Site.

Meeting the challenges

Working together with maths practitioners

There are benefits to all concerned when vocational and maths practitioners plan work together. Maths specialists can gain an insight into where learners are likely to encounter maths in the world of work, and you get to see how maths is taught to your learners in their maths lessons. You may also be able to get support from the maths specialists in relation to particular maths topics.

Some clips of staff working together are shown in the films which link to this guide: one from Hospitality and Catering and one from Health and Social Care.

This report and the associated case studies describe how embedding works, and the benefits it brings. "You Wouldn't Expect a Maths Teacher to Teach Plastering …" NRDC, Nov 2006.

Teaching and learning strategies: embedding and contextualising

Some learners may respond better to practical interactive approaches than formal teaching. Try to discuss any maths involved in their vocational tasks; show learners how using maths will help to produce a better solution to a vocational problem, save them work, or avoid errors; and help learners make connections to what they are learning in maths classes.

This clip from the Maths Pipeline Programme, shows learners talking with a practitioner about a maths session with a childcare theme.

This booklet from the Maths4Life series examines topic-based teaching. There is a wealth of good advice about teaching approaches, and assessment.

The MEI Contextualisation Toolkit provides a range of guides and resources to support practitioners in making greater use of context in their teaching, including developing their own contextualised resources.

The MEI Maths at Work Guides consists of two documents, one for practitioners and one for employers, which include excellent ideas and advice for integrating maths learning and work experience.

Take a look at the model HMP Oakwood developed for embedding functional skills in vocational teaching and learning.

Teaching and learning strategies: developing deep understanding of key mathematical ideas

One place to start is Thinking Through Mathematics, which emphasises the interconnected nature of maths, and supports teachers and learners to use formative assessment strategies to identify and address common conceptual difficulties. The mathematics dealt with here is roughly Entry Level to Level 2.

A related resource, Improving Learning in Mathematics, offers similar approaches for mathematics from Level 1 to Level 3.

Professor Malcolm Swan of Nottingham University, whose research underpinned both *Improving Learning in Mathematics*, and *Thinking Through Mathematics*, identified eight principles for effective teaching of maths.

Teaching is more effective when it …

- builds on existing knowledge
- exposes and discusses misconceptions
- uses higher-order questions
- uses cooperative small group work
- encourages reasoning not 'answer getting'
- uses rich, collaborative tasks
- creates connections between topics
- uses technology in appropriate ways

Take a look at Improving Learning in Mathematics and Thinking Through Mathematics on the NCETM website for more information about these principles and how you can apply them in your own practice.

Initial, diagnostic and formative assessment

Your learners will learn most effectively when you and they develop insights - through initial and formative assessment approaches - into their needs. Maths specialists often carry out initial and diagnostic assessments before learners join a course, and may be able to share the results with you. You can also use informal self-evaluation questionnaires to help you and your learners understand their needs, and often these can be directly related to a topic they are working on. And most of the resources recommended in this guide have strong elements of formative assessment; for example insights often emerge directly from learner-learner or teacher-learner discussions during active learning activities.

The Excellence Gateway has a collection of diagnostic assessments covering all levels (search for 'numeracy diagnostic assessment').

The report, Effective Practices in Post-16 Vocational Maths, ETF, Dec 2014 (page 15) discussed current UK practice in diagnosis and assessment.

The document Approaches to formative and summative assessment of functional skills provides further useful information.

The Excellence Gateway site has some advice on formative and summative assessment. (Search for 'formative assessment' or 'summative assessment.)

Track learners' mathematical progress alongside their vocational targets

This will help you and the learners to see where they are progressing and where they need further support. This tracking could also be linked to a positive incentive scheme. Again, this is an area that your maths specialist may be able to support you with.

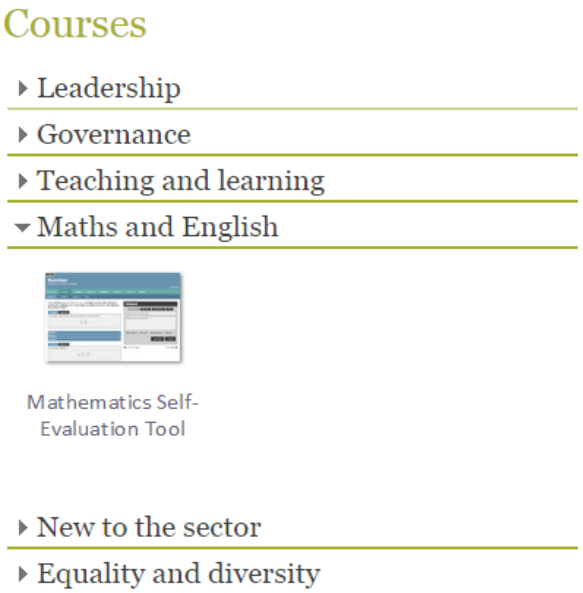
How can I develop my own maths knowledge and skills?

In parallel with developing your teaching strategies, you may wish to develop your personal maths skills.

A quick internet search may yield a good film clip or document which helps. Another approach might be to ask a friend or colleague, maybe someone from your maths department if you work in a college. to ask a friend or colleague, maybe someone from your maths department if you work in a college. Some clips of staff working together are shown in the films which link to this guide, and have been referenced earlier:

- YouTube: ETF MPP Health and Social Care: Developing mathematical understanding to help learners progress
- YouTube: ETF MPP Health and Social Care: Embedding maths in Health and Social Care
- YouTube: ETF MPP Health and Social Care: Contextualising maths

A comprehensive approach to your continuing professional development is to start with an assessment of your needs using this ETF Foundation maths self-evaluation tool. You will need to start by creating a free account. Once this is done, you can find the self-evaluation tool by clicking on Maths and English under the Courses heading. The tool provides a framework for you to self-assess both your personal maths skills and your teaching skills, and signposts you to further support.



References

External references

This guide offers links to external websites and resources. At the time of publication all urls provided were correct; however, website addresses may be updated and changed. For each reference, the full name of the publication / resource has been provided to help you deal with any broken links.

The references below are split by chapter and section heading.

About this guide

1. The Education and Training Foundation Maths Pipeline http://www.et-foundation.co.uk/
2. YouTube video: ETF MPP Supporting maths in post-16 vocational and Secure Sector provision: An introduction https://youtu.be/EiLhhqE1Rn4
3. YouTube library: Excellence Gateway films to support post-16 teaching and learning https://www.youtube.com/user/excellencegateway/

Why should I be concerned about developing my learners' maths skills?

4. "You wouldn't expect a maths teacher to teach plastering...": Embedding literacy, language and numeracy in post-16 vocational programmes - the impact on learning and achievement (2006) http://dera.ioe.ac.uk/22311/
5. A report by the Advisory Committee on Mathematics Education (ACME) in 2011, 'Mathematical Needs: Mathematics in the workplace and in Higher Education' http://www.acme-uk.org/media/7624/acme_theme_a_final%20%282%29.pdf
6. Ofsted Annual Report 2013/14: further education and skills report https://www.gov.uk/government/publications/ofsted-annual-report-201314-further-education-and-skills-report
7. Professional Standards: 'Initial Guidance for users of the Professional Standards for Teachers and Trainers in Education and Training – England' http://www.et-foundation.co.uk/wp-content/uploads/2014/05/ETF-Prof-Standards-Guidance-v2-2.pdf

Why use a vocational lesson to develop maths skills?

8. YouTube - ETF MPP Health and Social Care: Embedding maths in Health and Social Care https://youtu.be/UTXxNxvsYeo
9. YouTube - ETF MPP Health and Social Care: Developing mathematical understanding to help learners progress https://youtu.be/XsCQNXCsGVM
10. See 4
11. ETF: 'Effective Practices in Post-16 Vocational Maths' http://www.et-foundation.co.uk/supporting/research/effective-practices-post-16-vocational-maths/
12. NIACE: 'Engagiing Learners in GCSE Maths and English' Feb 2015 http://shop.niace.org.uk/media/catalog/product/e/n/engaging_learners_report_1.pdf
13. NIACE: 'Vocational Training and Employability Skills in Prisons and Young Offenders Institutions' Jul 2013 http://shop.niace.org.uk/training-skills-prisons-yois.html
14. See 7

Some teaching ideas

Picturing the maths in your vocational area

15. See 1

Other learning activities related to your vocational area

16. Excellence Gateway: Work-based Learning http://maths.excellencegateway.org.uk/workbased-learning
17. See 16
18. Excellence Gateway home page featuring a search facility http://www.excellencegateway.org.uk/
19. Cre8ate Maths online resources: Childcare and Early Years (03.), and Health and Social Care (08.). (You will need to register free.) http://www.cre8atemaths.org.uk/resources

20. Google Earth - free to download http://www.google.com/earth/download/ge/agree.html
21. Design tool on Homebase's website for designing a room http://www.homebase.co.uk/en/static/room-planner

Tarsia

22. Tarsia on the Hermitech Laboratory - Information on Formulator Tarisa
http://www.mmlsoft.com/index.php/products/tarsia

Sometimes true, always true, never true

23. NCETM interactive resource, 'Thinking Through Mathematics'. You need to register free on the NCETM portal
https://www.ncetm.org.uk/online-cpd-modules/ttm/contents
24. NCETM Thinking Through Mathematics - collection of statements You need to register free on the NCETM portal
https://www.ncetm.org.uk/online-cpd-modules/ttm/teaching-activities/evaluating-mathematical-statements

Top Trumps

25. TES online teaching resources. Enter 'Top Trump maths' into the search term.
https://www.tes.co.uk/teaching-resources

Other resources to help learners understand key mathematical ideas

26. WisWeb applets http://www.fi.uu.nl/wisweb/applets/mainframe_en.html
27. Virual Maths website http://www.virtualmaths.org/

What challenges am I likely to face?

Engaging learners

28. Film on BBC Skillswiswe - 'Why are maths and English skills useful in nursing and care jobs?'
http://www.bbc.co.uk/programmes/p00k3pm4
29. Film on BBC Skillswise - Why are maths and English skills useful in childcare and teaching?
http://www.bbc.co.uk/programmes/p00k3ym0

Some learners may need to improve their confidence with basic maths

30. NIACE report - 'Vocational Training and Employability Skills in Prisons and Young Offenders Institutions' May 2013 (see page 44) http://shop.niace.org.uk/media/catalog/product/v/t/vt_and_es_report_2013_final_1.pdf
31. NIACE - 'Maths4Prisons: Maths Mentor Handbook' http://shop.niace.org.uk/maths4prisons-handbook.html
32. YouTube - ETF MPP Teaching Maths in the Secure Sector: Developing peer mentoring in the secure sector
https://youtu.be/X-R2-zBqNqU

Difficult topics

33. NCETM website - Maths4Life 'Taking the Numeracy Challenge Forward Resources'
https://www.ncetm.org.uk/resources/numeracy_challenge_microsite_resources
34. Maths Everywhere, interactive learning tool http://www.mathseverywhere.org.uk/
35. Skills workshop - Free funcital skills and skills for life resources
http://www.skillsworkshop.org/contextual?op=or&tid_depth%5B%5D=4
36. See 18
37. Excellence Gateway: Exhibitions website - Raising Standards in Maths http://maths.excellencegateway.org.uk/

Working in the Secure Estate

38. See 13
39. YouTube - Embedded Learning at HMP Swaleside
https://www.youtube.com/watch?v=AbRfDOOf-OA&feature=youtu.be
40. Prisoners' Education Trust - Teaching in the gym at HMP Swaleside, 15 May 2013
http://www.prisonerseducation.org.uk/news/teaching-in-the-gym-at-hmp-swaleside
41. Prisoners' Education Trust - Fit for Realease, Aug 2012
https://fbclientprisoners.s3.amazonaws.com/Resources/PET_Fit_for_Release_Report.pdf
42. YouTube - Offender Teaching & Learning Toolkit (Vocational Training)
https://www.youtube.com/watch?v=2kNpx506-vU
43. YouTube - Offender Teaching & Learning Toolkit (English, Maths, ESOL & ICT)
https://www.youtube.com/watch?v=KoCUI0CSJtI

44. Excellence Gateway: Exhibitions website - Offender learning http://offender-learning.excellencegateway.org.uk/

Meeting the challenges

Working together with maths practitioners

45. YouTube - ETF MPP Hospitality and Catering: Vocational and maths practitioners working together
https://youtu.be/rZWiBhXHMk4
46. YouTube - ETF MPP Health and Social Care: Embedding maths in Health and Social Care
https://youtu.be/UTXxNxvsYeo
47. See 4

Teaching and learning strategies: embedding and contextualising

48. YouTube - ETF MPP Health and Social Care: Contextualising maths
https://youtu.be/lzydNF9yb3A
49. NCETM - Maths4Life Topic-based teaching Booklet (You will need to register free on the NCETM website)
https://www.ncetm.org.uk/resources/8855
50. MEI Contextualisation Toolkit http://www.mei.org.uk/contextualisation-toolkit
51. MEI - Maths at Work, A guide for employers offering work experience as part of 16 to 19 Study Programmes
http://www.mei.org.uk/files/pdf/Maths_at_Work-A_guide_for_employers_offering_work_experience_for_16-19_SPs.pdf
52. HMP Oakwood Starting with a "clean slate": embedding functional skills in prison work and training - LSIS Case Study
http://repository.excellencegateway.org.uk/fedora/objects/eg:5398/datastreams/DOC/content

Teaching and learning strategies: developing deep understanding of key mathematical ideas

53. NCETM - Thinking Through Mathematics: Principles of effective teaching (You will need to register free on the NCETM website)
https://www.ncetm.org.uk/online-cpd-modules/ttm/principles-for-teaching-mathematics/principles-of-effective-teaching
54. NCETM - Improving Learning in Mathematics (You will need to register free on the NCETM website)
https://www.ncetm.org.uk/resources/1442
55. See 53
56. See 52

Initial, diagnostic and formative assessment

57. See18
58. See 11
59. Excellence Gateway - Approaches to formative and summative assessment of functional skills
http://www.excellencegateway.org.uk/content/etf1324
60. See 18

How can I develop my own maths knowledge and skills?

62. YouTube: ETF MPP Health and Social Care: Developing mathematical understanding to help learners progress
https://youtu.be/XsCQNXCsGVM
63. YouTube: ETF MPP Health and Social Care: Embedding maths in Health and Social Care
https://youtu.be/UTXxNxvsYeo
64. YouTube: ETF MPP Health and Social Care: Contextualising maths
https://youtu.be/lzydNF9yb3A
65. ETF Foundation Online Learning - Self-evaluation tool
http://www.foundationonline.org.uk/

www.et-foundation.co.uk