Perspectives on teachers’ numeracy, investigated via examination of comment and conversation.

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Appendix Volume One
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Appendix I - Technical information for LIWC 2007 digital text interpretation environment.
Table 1: LIWC2007 Output Variable Information

Words in category refer to the number of different dictionary words that make up the variable category. **Validity judges** reflect the simple correlations between judges’ ratings of the category with the LIWC variable (from Pennebaker & Francis, 1996). **Alphas** refer to the Cronbach alphas for the internal reliability of the specific words within each category. The binary alphas are computed on the occurrence/non-occurrence of each dictionary word whereas the raw or uncorrected alphas are based on the percentage of use of each of the category words within the texts. All alphas were computed on a sample of 2800 randomly selected text files from our language corpus.

The LIWC dictionary generally arranges categories hierarchically. For example, all pronouns are included in the overarching category of function words. The category of pronouns is the sum of personal and impersonal pronouns. There are some exceptions to the hierarchy rules:

- **Common verbs** are not included in the function word category. Similarly, common verbs (as opposed to auxiliary verbs) that are tagged by verb tense are included in the past, present, and future tense categories but not in the overall function word categories.

- **Social processes** include a large group of words (originally used in LIWC2001) that denote social processes, including all non-first-person-singular personal pronouns as well as verbs that suggest human interaction (talking, sharing).

- **Perceptual processes** include the entire dictionary of the Qualia category (which is a separate dictionary), which includes multiple sensory and perceptual dimensions associated with the five senses.
The ways that individuals talk and write provide windows into their emotional and cognitive worlds. Over the last three decades, researchers have provided evidence to suggest that people's physical and mental health can be predicted by the words they use (Gottschalk & Glaser, 1969; Rosenberg & Tucker, 1978; Stiles, 1992). More recently, a large number of studies have found that having individuals write or talk about deeply emotional experiences is associated with improvements in mental and physical health (e.g., Pennebaker, 1997; Smyth, 1997). Text analyses based on these studies indicate that those individuals who benefit the most from writing tend to use relatively high rates of positive emotion words, a moderate number of negative emotion words, and, most importantly, an increasing number of cognitive or thinking words from the first to last days of writing (e.g., Pennebaker & Francis, 1996; Pennebaker, Mayne, & Francis, 1997).

In order to provide an efficient and effective method for studying the various emotional, cognitive, structural, and process components present in individuals' verbal and written speech samples, we developed a text analysis application called Linguistic Inquiry and Word Count, or LIWC. The first LIWC application was developed as part of an exploratory study of language and disclosure (Francis, 1993; Pennebaker, 1993). As described below, the second version, LIWC2007, is an updated revision of the original application. It is best suited for Windows-based and Power Macintosh platforms. LIWC2007 applications are designed to analyze written text on a word by word basis, calculate the percentage words in the text that match each of up to 82 language dimensions, and generate output as a tab-delimited text file that can be directly read into application programs, such as SPSS for Windows, Excel, etc.
The LIWC2007 Framework

The LIWC2007 application contains within it a default set of word categories and a default dictionary that defines which words should be counted in the target text files. Note that the LIWC2007.EXE file is an executable file and cannot be read or opened. To avoid confusion in the subsequent discussion, text words that are read and analyzed by LIWC2007 are referred to as target words. Words in the LIWC2007 dictionary file will be referred to as dictionary words. Groups of dictionary words that tap a particular domain (e.g., negative emotion words) are variously referred to as subdictionaries or word categories.

The LIWC2007 Main Text Processing Module

LIWC2007 is designed to accept written or transcribed verbal text which has been stored as a text or ASCII file using any of the popular word processing software packages (e.g., WordPerfect or Word). LIWC2007 accesses a single file or group of files and analyses each sequentially, writing the output to a single file. Processing time for a page of single-spaced text is typically a fraction of a second. LIWC2007 reads each designated text file, one target word at a time. As each target word is processed, the dictionary file is searched, looking for a dictionary match with the current target word. If the target word matches the dictionary word, the appropriate word category scale (or scales) for that word is incremented. As the target text file is being processed, counts for various structural composition elements (e.g., word count and sentence punctuation) are also incremented.

With each text file, approximately 80 output variables are written as one line of data to a designated output file. This data record includes the file name, 4 general descriptor categories (total word count, words per sentence, percentage of words captured by the dictionary, and percent of words longer than six letters), 22 standard linguistic dimensions (e.g., percentage of words in the text that are pronouns, articles, auxiliary verbs, etc.), 32 word categories tapping psychological constructs (e.g., affect, cognition, biological processes), 7 personal concern categories (e.g., work, home, leisure activities), 3 paralinguistic dimensions (assents, fillers, non-fluencies), and 12 punctuation categories (periods, commas). A complete list of the standard LIWC2007 scales is included.

The Default LIWC2007 Dictionary
The LIWC2007 Dictionary is the heart of the text analysis strategy. The default LIWC2007 Dictionary is composed of almost 4,500 words and word stems. Each word or word stem defines one or more word categories or sub-dictionaries. For example, the word cried is part of five word categories: sadness, negative emotion, overall affect, verb, and past tense verb. Hence, if it is found in the target text, each of these five sub-dictionary scale scores will be incremented. As in this example, many of the LIWC2007 categories are arranged hierarchically. All anger words, by definition, will be categorized as negative emotion and overall emotion words. Note too that word stems can be captured by the LIWC2007 system. For example, the LIWC2007 Dictionary includes the stem hungr* which allows for any target word that matches the first five letters to be counted as an ingestion word (including hungry, hungrier, hungriest). The asterisk, then, denotes the acceptance of all letters, hyphens, or numbers following its appearance.

Each of the default LIWC2007 categories is composed of a list of dictionary words that define that scale.

LIWC2007 Dictionary Development

The selection of words defining the LIWC2007 categories involved multiple steps over several years. The initial idea was to identify a group of words that tapped basic emotional and cognitive dimensions often studied in social, health, and personality psychology. With time, the domain of word categories expanded considerably.

**Step 1. Word Collection.** In the design and development of the LIWC2007 category scales, sets of words were first generated for each category scale. Within the Psychological Processes category, for example, the emotion or affective sub-dictionaries were based on words from several sources. We drew on common emotion rating scales, such as the PANAS (Watson, Clark, & Tellegen, 1988), Roget’s Thesaurus, and standard English dictionaries. Following the creation of preliminary category word lists, brain-storming sessions among 3-6 judges were held in which words relevant to the various scales were generated and added to the initial scale lists. Similar schemes were used for the other subjective dictionary categories.

**Step 2. Judges’ Rating Phases.** Once the broad word lists were amassed, those words in the Psychological Processes and Personal Concerns and most in the Relativity (excluding verb tense) categories were then rated by three independent judges. In this phase of development,
the judges were instructed to focus on both the inclusion and exclusion of words in each LIWC2007 Dictionary scale list. First, the judges indicated whether each word in the scale list should or should not be included on the particular scale in question. Second, they were instructed to include additional words they felt should be included in the scale. After the completion of the first judging phase, all category scale word lists were updated by the following set of rules: 1) a word remained on the scale list if two out of three judges agreed, 2) a word was deleted from the scale list if at least two of the three judges agreed it should be excluded, and 3) a word was added to the scale list if two out of three judges agreed. Due to the objective nature of elements in the Standard Language Dimensions category (e.g., articles, pronouns, prepositions), judges' ratings were not collected for the various scale lists in that category.

The second rating phase involved the discrimination of LIWC2007 category word elements. Judges were given category level alphabetized word lists (e.g., all Cognitive Process words) and asked first to indicate whether each word in the list should or should not be included in the high-level category in question. Second, judges were instructed to indicate in which, if any, of the mid-level scale lists the word should be included (e.g., Insight, Causation). Percentages of agreement for judges' ratings were acceptable for all LIWC2007 Category and scale lists (ranging from a low of 86% agreement for Optimism to 100% agreement for Relatives).

After completion of the second judging phase, all category scale word lists were updated by the following rules: 1) a word remained on the scale list if two out of three judges agreed and 2) a word was deleted from the scale list if at least two of the three judges agreed. The final percentages of judges' agreement for this second pass ranged from 93% agreement for Insight to 100% agreement for Eating, Metaphysical, Friends, Relatives, and Humans.

**Step 3. Psychometric Evaluation.** The initial LIWC judging took place in 1992-1994. A significant LIWC revision was undertaken in 1997 to streamline the original program and dictionaries. Text files from several dozen studies, totalling over 8 million words were analysed using the 1997 version of LIWC as well as Word Smith, a powerful word count program used in discourse analysis. Original LIWC categories that were used at very low rates (less than 0.3 percent of words made up the category) or that suffered from consistently poor reliability or validity were omitted. Several new categories, including social processes, several personal concern categories, and the relativity dimensions, were added following the same stringent judge-based procedures described above (including both passes). Finally, once the entire new LIWC dictionary was assembled, any words that were not used at least 0.005 percent of the time in our previous text files or were not listed in Francis and Kucera's (1982) *Frequency Analysis of English Usage* were excluded.
**Step 4. Updates and Expansions.** The most recent version, LIWC2007, involved substantial updating of the dictionaries and modification in the dictionary structure. Drawing on over several hundred thousand text files made up of several hundred million words from both written and spoken language samples, we sought to identify common words and word categories not captured in the earlier LIWC versions. Examining the 2000 most frequently used words, a group of four judges individually and collectively agreed which new words and new word categories were appropriate for inclusion. Based on recent studies suggesting that function words are particularly relevant to psychological processes, we added the categories of Conjunctions, Adverbs, Quantifiers, Auxiliary Verbs, Commonly-used Verbs, Impersonal Pronouns, Total Function Words, and Total Relativity Words. In addition, third person pronouns were divided into 3rd person singular and 3rd person plural. Finally, a large group of punctuation marks have been added as separate categories.

For those who are familiar with LIWC2001, it will be clear that some of the original categories have been removed – primarily because these categories had consistently low base rates and were rarely used: Optimism, Positive Feelings, Communication Verbs, Other References, Metaphysical, Sleeping, Grooming, School, Sports, Television, Up, and Down. The category of Unique Words (also known as Type/Token ratio) has also been removed. This category typically correlates with word count at -.80. Note that an alternative default LIWC2001 dictionary is available.

LIWC2007’s External Validity

Assessing the reliability and validity of text analysis programs is a tricky business. On the surface, one would think that you could determine the internal reliability of a LIWC scale the same way it is done with a questionnaire. With a questionnaire that taps anger or aggression, for example, participants complete a self-report asking a number of questions about their feelings or behaviors related to anger. Reliability coefficients are computed by correlating people's answers to the various questions. The more highly they correlate, the reasoning goes, the more the questions all measure the same thing. Voila! The scale is deemed internally consistent.

A similar strategy can be used with words. The LIWC Anger scale, for example, is made up of 184 anger-related words. In theory, the more people use one type of anger word in a given text, the more likely they should be to use other anger words in the same text. To test this idea, we can determine the degree to which people use each of the 184 anger words across a select
group of text files and then calculate the inter-correlations of the word use. The internal reliability statistics are based on the correlation between the occurrences of each word in a category with the sum of the other words in the same category. The binary method converts the usage of each of the single words within a given text into either a 0 (not used) or a 1 (used one or more times). The uncorrected method is based on the percentage of total words that each of the category words are used. The binary method has the potential to overestimate reliability based on the length of texts; the uncorrected method tends to underestimate reliability based on the highly variable base rates of word usage within any given category.

But be warned: the psychometrics of natural language use are not as pretty as with questionnaires. The reason is obvious once you think about it. Once you say something, you generally don’t need to say it again in the same paragraph or essay. The nature of discourse, then, is we usually say something and then move on to the next topic. Saying the same thing over and over again is generally bad form.

Issues of validity are also a bit tricky. We can have people complete a questionnaire that assesses their general moods and then have them write an essay which we then subject to the LIWC program. We can also have judges evaluate the essay for its emotional content. In other words, we can get self-reported, judged, and LIWC numbers that all reflect a participant's anger. One of the first tests of the validity of the LIWC scales was undertaken by Pennebaker and Francis (1996) as part of an experiment in which first year college students wrote about the experience of coming to college. During the writing phase of the study, 72 Introductory Psychology students met as a group on three consecutive days to write on their assigned topics. Participants in the experimental condition (n = 35) were instructed to write about their deepest thoughts and feelings concerning the experience of coming to college. Those in the control condition (n = 37) were asked to describe any particular object or event of their choosing in an unemotional way. After the writing phase of the study was completed, four judges rated the participants’ essays on various emotional, cognitive, content, and composition dimensions designed to correspond to selected LIWC Dictionary scales.

Using LIWC output and judges' ratings, Pearson correlational analyses were performed to test LIWC’s external validity.

Base Rates of Word Usage

In evaluating any text analysis program, it is helpful to get a sense of the degree to which language varies across settings. Since 1986, we have been collecting text samples from a variety of studies – both from our own lab as well as from 28 others in the United States, Canada, and New Zealand. For purposes of comparison, six classes of text from 72 separate
studies were analysed and compared. These analyses reflect the utterances of over 24,000 writers or speakers totalling over 168 million words. Overall, 29 samples are based on experiments were people were randomly assigned to write either about deeply emotional topics (emotional writing) or about relatively trivial topics such as plans for the day (control writing). Individuals from all walks of life – ranging from college students to psychiatric prisoners to elderly and even elementary-aged individuals – are represented in these studies. A third class of text was based on 113 highly technical articles in the journal Science published in 1997 or 2007. A fourth sample included 714,000 internet web logs, or blogs, from approximately 20,000 individuals who posted either on Blog.com in 2004 or LiveJournal.com in the summer and fall of 2001. The fifth sample was based 209 novels published in English between 1700 and 2004. The American and British novels included best-selling popular books as well as more classic novels. Finally, we analysed data from seven observational studies in which participants were tape-recorded while engaging in conversations with others. The speech samples ranged from transcripts of people wearing audio recorders over days or weeks, strangers interacting in a waiting room, to couples talking about problems, to open-air tape recordings of people in public spaces. The LIWC2007 version captures, on average, 86 percent of the words people used in writing and speech. Simple one way ANOVAs indicated that word usage was significantly different across the four settings for all of the word categories.
Linguistic Inquiry and Word Count (LIWC) is a text analysis software program designed by James W. Pennebaker, Roger J. Booth, and Martha E. Francis. LIWC calculates the degree to which people use different categories of words across a wide array of texts, including emails, speeches, poems, or transcribed daily speech. With a click of a button, you can determine the degree any text uses positive or negative emotions, self-references, causal words, and 70 other language dimensions.

The LIWC program can analyse hundreds of standard ASCII text files or Microsoft Word documents in seconds. The LIWC2007 program also allows you to build your own dictionaries to analyse dimensions of language specifically relevant to your interests. The Macintosh version of LIWC2007 has a feature that will highlight in colour all the words found in a particular file when it is analysed. Users can also create dictionaries that include literal phrases (e.g. 'you know') as well as individual words and word stems. These feature will soon be available for the Windows LIWC2007 version as well.

The student version of LIWC, LIWClite7, only analyses plain text files using the LIWC2007 and earlier LIWC2001 dictionaries. LIWClite7 is the student version that is ideal for people with limited text analysis needs.
Appendix II - Technical information - keyword density online search engine optimization strategy.
Keyword Analysis is a fundamental search engine optimization strategy. Using the live keyword analysis tool below, you can simply type in your keywords and then paste in your text and your keyword density analysis will be done on the fly. No need to press submit, it updates automatically. This means that you can do all your editing within the text box, and receive live feedback about your keyword density.

This tool is designed so that you can refine a body of text so that it matches the keyword density that you require to rank highly on the search engines.

Let's say you are aiming for a 3% keyword density on your text for the words car, automobile, and truck. You would type each of these three words into the keyword text boxes.

You would then paste your content into the text box. This will automatically update itself and tell you the kwd for that body of text. You might discover that car is around 5% but "automobile" is only at 1%. You can modify your text and see the resulting kwd in real time. So you could change your references from "car" to "automobile" and this might balance it out.

It all happens on the fly, so you don't need to make the page, and then upload it, then do a check at www.keywordcount.com for your kwd over and over again. It does it for you as you are doing it.

This should save you a lot of guessing and a lot of time.

If you have any questions on how to get the most out of this tool, feel free to give me a holler and I will try (sorry I unfortunately can't answer all e-mails) to give you a hand. If you have some suggestions on how to make it better, please feel free to e-mail also.

Search engines use specific rules when calculating keyword density. They ignore words often known as filter words. This calculator tries to mimic the search engines as closely as possible, while keeping in mind that this is not an exact science. This keyword density analyser ignores all one and two letter words, as well as the following:

head, html, meta, table, title, and, but, for, from, here, her, his, how, not, than, that, the, them, then, these, they, this, was, were, with. It is also not case sensitive. It will use part words if they are part of a plural, but won’t if the word appears in the middle of another word of a different meaning.

The live keyword analyser also rounds the percentage. This was done on purpose to simplify life.
Appendix III – Comments posters taken from forum comments
I sat the numeracy skills test 4 times. I passed them all first time, including the numeracy.

I finally passed after six tries.

I have had a number of attempts.

I passed the numeracy skills test first time.

It took me many times to pass my numeracy test,

I passed my numeracy QTS first time...

Today I have passed my Numeracy Skills Test. It was my 18th attempt.

I have recently taken the numeracy skills test for the 7th time and FINALLY passed it!!!!!
As a parent of an ten year old child, I would be horrified to find out that their teacher couldn’t do the maths they were suppose to be teaching!!

As trainees you probably have no idea the types of data and numbers that more experienced teachers work with on a daily basis.

why should you need to pass your Maths skills test when you’re teaching English or Languages?

best at Maths, or English, but without a doubt, these skills are integral to the profession and need to be better than the children’s abilities.

schools could lose out on perfectly good teachers (and I’m not meaning myself here, per se) because they struggle with

I really would hate to think that I could not become a teacher in a subject that hardly ever uses maths!

In your job as a teacher, you will have to work with numbers on a regular basis - for example exam statistics, lesson and course planning (time). If you went to the maths department every time you came across a number problem, the maths department would get tired pretty quickly - you are supposed to be educated, and as such should have learned these skills at school. Maths departments are not there as a security blanket for a lack of effort earlier on in your education.

I think i will be a great teacher but think i may fail my course because I can’t pass the English and Maths tests

I was great at school and had a B for my A level maths, but I cannot count fast. I know what to do, but it takes time to count. I also find it annoying, I don’t understand why all teachers are supposed to be fast in numbers,

Since I am training to teach Secondary English, I really don’t see what being able to do mental arithmetic in a timed situation has to do with my ability to teach my subject.

I’m a Maths specialist, just as I teach literacy across the curriculum in my Maths lessons, the English (and others!) do NAC, just the other day an English teacher sent for graph paper for pupils to do graph work in English.

As to why teachers other than generalists and Maths specialists need to use maths. Aside from teaching 'numeracy across the curriculum' as a teacher you will be required to work with data.

Hi I’m doing secondary french and german and I still cannot understand the mental arithmetic section is of use to me. I already have a GCSE in Maths which was a requirement of the course and I won’t have to work out any of the questions in my head that are on the test. So I won’t be getting year 6’s asking me any maths questions thank god.

I know that fantastic teachers may not be the best at Maths, or English, but without a doubt, these skills are integral to the profession and need to be better than the children’s abilities.

why should you need to pass your Maths skills test when you’re teaching English or Languages?

As to why teachers other than generalists and Maths specialists need to use maths. Aside from teaching 'numeracy across the curriculum' as a teacher you will be required to work with data.
If I was in any kind of position of power I’d abolish the tests, I think their pointless
Mental calculations can be quite difficult
Personally I didn’t find any of the tests too taxing and none of it is close to what we did at GCSE
These tests mean nothing. Lets be honest... with Maths, if you were calculating how many children are going to the swimming pool at £3.30 a head and £1.20 each for travel, would you REALLY trust yourself to do it without a calculator. I think not.
The calculations on the mental arithmetic section test tend to be ones which can be worked out fairly easily

I'm also really really scared about the numeracy test
but the maths was horrendous!

I was very anxious because I have never considered maths to be my strong point.
The numeracy skills test is seriously upsetting me.

These tests are pointless. They should make them a lot longer and harder and carry individual marks so they actually mean something. Passing a numeracy test that a Year 7 could do doesn't exactly prove much.
The maths test is not hard. It is a day to day, bread and butter mathematics

Hi I have complete sympathy with anyone taking or struggling to pass the stupid Numeracy QTS Test
I found the actual test to be a lot easier than the practice one

I was petrified about my numeracy test

for me the QTS numeracy was a horrible mixture of stress and boredom

I was worried about the mental arithmetic

I also found the numeracy test difficult and so have a number of people in my class,

I cannot envisage myself passing this daunting numeracy test despite having a PhD in Psychology

I think something seriously needs to be done about this test in particular because there must be others out there like me that just aren't mathematically minded but good teachers!
I think once I know how to do the mental arithmetic part I'll be fine, and I'll just have to struggle through the statistics-type part.

The perception of the numeracy test

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for me the QTS numeracy was a horrible mixture of stress and boredom
I teach languages so I'm not gonna be sat around working out fractions and quite frankly won't do nothing in my head and if it gets complicated I will go to the maths dept for help!

Maths has always been my worst subject, I really struggled at school. I am a performing arts and SEN teacher and failed to see the point in much of it.

I was hopeless at mental maths, it just scares me so much, miracle really, considering how numerically challenged I am.

I consider Maths my weaker subject, but if I could pass numeracy, believe when I say, anyone could.

I struggle quite badly with math

Despite the stress of it, having to relearn lots of maths has been a good thing really, I feel much

I will admit I am not especially confident teaching maths.

I enjoyed our numeracy lessons and spent hours making awesome resources and thinking up fun ways to teach concepts.

I was worried about my maths SK for teaching, especially since I know the way the subject is taught is so different from the way I was taught.

I have always had problems with maths

Not at all - I find maths tough too

I have a mental block when it comes to maths, and have never been very good at Maths and was very nervous.

I am the world's worst at Maths and managed to pass first time last weekend - if I can do it then anyone can!!

I am SHOCKING at anything to do with numbers, I'm just not numerically minded at all.

I have a mental block when it comes to maths, no really though, I am a spanner at maths. Of course I can do yr2 maths, i just really have a problem with numbers jiggling themselves around and coming up with ludicrous answers.

I am not mathematically inclined; only getting a C grade at O'Level, but I passed.

I do not consider maths my strongest subject

Maths really isn't my strongest point

I am not particularly good at maths, just because I passed the test which says I should know "everything about numeracy", doesn't mean I won't need reminding.

Most people I know have to get over a mental block with a maths/num exam - no matter how 'simple'.

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I have always had problems with maths

Not at all - I find maths tough too
However to not be confident with most year 6 maths, no matter what age group you want to teach, is not acceptable.

As a teacher who has been doing the job for a while, it is disheartening to hear/read of student teachers, i.e. the next generation of teachers, who are struggling with Key Stage One and Two Maths.

Struggling with year 2 and year 5 Maths is not acceptable and I would challenge you to find any decent teacher, Headteacher, OFSTED inspector, parent or governor who thinks it is.

Better to be honest and seen as arrogant to a student teacher than to be unhelpful to a class of 12 year olds you're meant to be teaching who know more mathematics than you.

I just worry when I see potential teachers who can't work out what a half of 274 is, work out a percentage, do very basic algebra, etc etc without having to read up on it and revise it loads first.

The best maths teachers are not, necessarily, the ones who find maths 'easy'.

Yes, but is that not arithmetic mental agility rather than an understanding of basic maths?

No sympathy from me, that is why mathematics is a CORE subject because it embodies multiple intelligences.

Those who find mathematics more difficult tend to have a better understanding of how to use different teaching styles to deliver maths :-) it is now one of my favourite subjects to teach and the childrens to learn they love it.

I can definitely say that the areas covered in the numeracy test have been useful in teaching and in administration.

No-one is asking you to do maths. It's numeracy - number work.

8 attempts to pass a KS2 maths test = wind up

maths that 11 year olds have to understand should be pretty easy for an adult to get to grips with

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As a teacher who has been doing the job for a while, it is disheartening to hear/read of student teachers, i.e. the next generation of teachers, who are struggling with Key Stage One and Two Maths.
I hadn't done maths for quite a few years and was out of practice.

A lot of people have struggled with numeracy/maths for many years.

I got a C at GCSE Maths in 1995 and have done no Maths since.

In a class of 22 only ONE had a good younger experience with a maths teacher.

I have always struggled with numbers since I was a teenager and don't know what else I can do.

I have struggled with maths ever since Primary school

I am good at maths; however I am unsure on certain things in mathematics having not done it since my school days!

The reason for my failure were panic attacks brought about by years of feeling inadequate at maths at school

I hadn't done any maths for 10 years

Passage of time
Any employer worth their salt would have a deep understanding of the curriculum area and make adequate provision for functional maths and English in the Job Description - wouldn't they.

I'm getting a bit 'narked off' with SfL.

If key studies and level 2 courses etc. are so important to students and staff then we should press all government ministers to get them done as well.

What needs to be considered here is the message that is being presented to our students. By employing staff who hold no formal qualification and are not necessarily committed to obtaining them, are we not undermining the value vocational and post compulsory qualifications have in the eyes of our students?

Not having a qualification does not make them illiterate or inumerate.

SFL and ICT seem to be offered up as the cure to the nations ills.

Numeracy isn't the same as Maths so this way you'd have the best of both.

However, if the teaching profession is to retain or improve standards then I feel the relevant qualifications should be obtained in teacher training, subject specialism and also in literacy or numeracy (dependant on subjects taught).

Would I want to be taught by someone who is lacking in teacher training or who has insufficient literacy or numeracy qualifications?

The person in question has no literacy or numeracy qualifications of any sort. And as it is vocational then assignments are numerous to include literacy and numeracy in the given area.

If key studies and level 2 courses etc. are so important to students and staff then we should press all government ministers to get them done as well.

MC POSTS

Views on numeracy
FE teachers will need to have at least GCSE English and Maths.

You will need QTS, and the requirements for that are a GCSE grade C or above in English, maths and science.

I'm doing my PGCE FE and have to do my C&G level 2 Key Skills in numeracy, literacy and computing. I'm already teaching this to FE students (tough luck them if I'm not up to scratch!) and have a scientific PhD, As at O-level in relevant subjects (except computing) but still have to take the exams (because they are more than five years old, and PhD not recognised as evidence of numeracy OR literacy!)

What "Skills for Life" literacy and numeracy qualifications you hold

The L2 ALAN tests would be useful if you were returning to FE work.

Do you still need the GCSE Maths and English grades C or above etc?

I believe you need Level 2 in English, Maths and ICT.

I went to for my cert ed required a copy of GCSE English and Maths certificates in order to qualify for the course

They are the standard of a grade C GCSE but do not cover the full GCSE syllabus in either English or Maths.

MC POSTS
Qualifications

Does this mean I do not need to resit my GCSE Maths and English,
this could be my first learning experience since compulsory education - hitting me with SfL at this point would present more of a barrier and prevent me from progressing onto further learning.

Can anyone help me in showing my tutors how I have integrated numeracy in law? I can show language, literacy and ICT, but numeracy...hmmm.

Does anyone know what numeracy content there is in a Level 2 Health and Social Care course please?

I've found it difficult too but I've used some of them and apparently this is OK to cover numeracy!

Any form of graph or table is numeracy. Anything with a number is numeracy. So anything about crime statistics, prosecuting rates, breakdown of criminals, cost of crime etc. is numeracy.

I have just done a form for the art teacher at our place, showing the common literacy and numeracy links to typical art tasks

I teach lit and num skills to L1 art and design students and one way I have found to do it is to link it in with a project they are working on.

I am a student F.E. teacher of art and design and have to begin integrating language, literacy and numeracy into my lessons. This is quite problematic for me as all of my coworkers believe that there is not enough time to do this

I am a trainee teacher of law and to be honest, numeracy is not on my learners curriculum. I have to show, however, that I have integrated numeracy within my lesson plans in which to achieve my PGCE (post 16).

whats the point of spoiling the provision by incorporating SfL activities? I can't really see no point! What I can see...is low retention.

Also if you do use data, beware, some may not be as numerate as you assume. They really may not understand a very simple pie chart etc

For my law degree, there wasn't a hint of numeracy,

Could you maybe do something with statistics?

Also if you do use data, beware, some may not be as numerate as you assume. They really may not understand a very simple pie chart etc

Also if you do use data, beware, some may not be as numerate as you assume. They really may not understand a very simple pie chart etc
Large numbers of people could do a reasonable job if suddenly put in a classroom of ten year olds and told to teach fractions.

I had such a fun and active childhood...Probably why I can't do fractions now, ay?!

I do share your apparent scepticism about how easy GCSE Maths is.

Because I have had such issues about it (mainly convincing myself I can't 'do maths' - which is wrong), I looked into the subject quite deeply. I found from reading research into the subject 'most' people feel that way about maths and in particular student teachers!

TERRIBLE maths education at school and was left way behind and avoided it for years,

in one school only 3 of 25 had GCSE Maths and English!

On my maths paper, to get a 'C' grade, you had to get over 60% of the paper correct & tackle such lovely topics such as, simultaneous linear equations - hardly the stuff of kindergarten maths!

The Maths and Science teachers I had were either mind-numbingly boring, or were more interested in stating their power over

had to have at least 5 good O levels including Maths and English

If they are not smart enough to achieve A-level in maths, should we not teach them what we can?

Can't understand calculus? Learn trigonometry. Still too hard, learn geometry. Still too hard, try

RS POSTS

Personal skills

Maths is a big deal for me

I was going to be a TA next year but I don't have Maths GCSE as I shall be taking it along side the job.

.. I can still recite my times tables

I demonstrated my competency in them by passing all of the tests.

Apparently tutors get the same response time after time from students (and teachers alike) they dread maths.

I had such issues about it (mainly convincing myself I can't 'do maths' - which is wrong), I looked into the subject quite deeply. I found from reading research into the subject 'most' people feel that way about maths and in particular student teachers!

so even GCSE maths grade C isn't a guarantee of a great grasp of the subject

with all GCSE requirements of C grade in English and Maths satisfied
Given the opportunity to take the level 2 numeracy and literacy within work time. She is sitting numeracy/literacy L1 and 2, and if these are equivalent to G.C.S.E. maths they might prove an easier and cheaper route for you.

Given that L2 numeracy and literacy are now needed L2 numeracy and literacy has equivalence!

Constant carping about FE teachers not having L2 numeracy and literacy or degrees; thus supporting your argument, is disingenuous to say the least and plain wrong. The requirement to gain QTLS is clear, you must have L2 in numeracy and literacy.

Come on a 12 year old could pass those tests. Are you really basing your professionalism on that point if so I find it very sad.

The process of the QTLS should make it a must that everyone should take Skills Test in English, Maths and ICT comparable to that of the the School's QTS.

As the criteria is a minimum of C grade in English and Maths at GCSE.

RS POSTS Parity

Given the opportunity to take the level 2 numeracy and literacy within work time.
a shocking 8% of 11-year-olds leave primary school without the literacy and numeracy skills of an average seven-year-old.

should have qualifications, and good ones at that, in English and Maths

GTCE require its members to possess the minimum of a C grade at GCSE in English and Maths and plus a subject specialist degree (in addition passing skills tests in English, Maths and ICT).

When historically 50% or more of our pupils went into factories or worked in labouring jobs, it didn't matter to the economy that many left school without good literacy or numeracy skills. Now that the country requires about 100% good literacy and numeracy skills, there is a problem

If anyone is worried about GCSE Maths, don't be. I ran an experiment in my first teaching placement, I gave level 6 year 7s the old intermediate paper - they got 2 B grades and 1 C. No one failed.

the importance of BASIC qualifications in literacy and numeracy for TAs

the reason that the government added the skills tests to the QTS standards was because they found that there were teachers with GCSEs in English and Maths who could not affectively communicate with pupils.

I don't agree with you that we should wait until the age of seven to start teaching the basics of literacy and numeracy.

If 11-12 year olds can hold enough of a grasp of these concepts to pass, I'm sure your TAs can do the same.

IFL should require all teachers wishing to pursue QTLS to possess a minimum of A-C GCSE grades in English and Maths.

for the future minimum A-C grades in English and Maths should be the minimum

national test results showed that more than a quarter of children aged 14 also failed to meet the expected standards in maths

In most cases, a good percentage of the FE staff do not even have the equivalent of a good pass grade in English and Maths at GCSE

I regard GCSE maths and english as the absolute minimum qualification for TAs in primary

then TAs must have GCSE C grade in Maths if they work in a primary school.

If 11-12 year olds can hold enough of a grasp of these concepts to pass, I'm sure your TAs can do the same.

a failed system where 20% (and that's only the lowball official figure) of those who enter and pass through are still functionally illiterate or innumerate when they come out the other end.

they are hard to teach at university. And it won't happen if they are insecure about the basics: if reasonable standards of writing and of mathematics (for scientists), have not been taught lower down the school.

the importance of BASIC qualifications in literacy and numeracy for TAs

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the importance of BASIC qualifications in literacy and numeracy for TAs

G.C.S.E at grade C or equivalent qualifications, in some cases, are no guarantee of skills, otherwise why would teacher training students, who already have G.C.S.E.s in core subjects, have to complete competency online exams before they

reduce the expectation of primary schools and ask only that they teach reading, writing and basic arithmetic.

In most cases, a good percentage of the FE staff do not even have the equivalent of a good pass grade in English and Maths at GCSE
Appendix IV - Functional skills staff induction tasks list
1. Log on to the college VLE and go to the Staff Functional Skills English and / or Maths course. You can access all the necessary websites from either course. On the Staff Functional Skills course dashboard, click on the initial assessment image and log in to the account that has been created for you. For most people, your username will be your initial followed by your surname, and the password is password. Occasionally, the username has already been taken and you will need to add a number to it. The password is password.

2. Complete the initial assessment activity for English and/or Maths so that an online personalised English and Maths skills development course can be created for you. Each activity takes around 20 minutes and it is advisable to complete both English and Maths activities at your induction.

3. Go back to the Staff Functional Skills course dashboard, click on the bulletin board image and accept the invitation to join the Staff Functional Skills group. You will need to create a teacher account. The bulletin board is a social networking site that's a bit like Facebook for educators and we're going to use it instead of the college VLE discussion board to share ideas about how best we can develop our learners' English and Maths skills.

4. Once you can access the group, reply to the posts that are there.

That's it for this evening! The next stage is to complete the more detailed diagnostic for English and / or Maths by Friday 19 April then complete the form that will be emailed to you to confirm your subject choice, attendance group and preferred mode of study.

Remember that you can book tutorials over Easter. Full details of who’s available when are on the VLE course dashboards.
Appendix V - Functional skills staff FAQs list
I’m too busy to do Functional Skills now. Can’t I leave it till summer or next year?

The induction session should reassure you that the staff programme is very flexible and not as time-consuming as you may fear. It isn’t necessary to attend every week, for instance. If there are exceptional circumstances, it is possible to agree a postponement with your director – speak to your line manager in the first instance.

I’m really worried about this. I’ve always struggled with Maths/English and I don’t think I’m ready for Level 2.

Please don’t worry! There’s intensive one-to-one coaching/support available to everyone. If you would rather take a staged approach and do Level 1 first, that’s fine. It may also be possible for you to undertake units from a new suite of English and Maths qualifications to plug any skills gaps before sitting the whole qualification. We’ll agree which level you’d like to be entered for after Easter, when all the initial and diagnostic assessments are completed.

I’ve already got GCSE/Adult Literacy/Numeracy/Key Skills? Do I need to do Functional Skills?

Yes. Functional Skills qualifications are very different from these earlier English and Maths qualifications. They aim to develop and
assess the skills genuinely needed for work and life. However, if you’ve already passed Functional Skills Level 2 English and Maths or GCSE English and Maths in summer 2012 (when ‘enhanced functional content’ was introduced), you don’t need to do Functional Skills.

**Will I lose my job if I don’t do this?**

No. Given the current national focus, it’s unlikely that any college, department or delivery session will be judged as outstanding unless English and Maths are effectively embedded, so we need to ensure that all delivery staff are familiar with and can embed Functional Skills in their sessions. We hope you see the benefits of this initiative, but the choice is ultimately yours.

**I’m confident I’ve got good Maths/English skills already. Can I fast track?**

Yes. A fast track programme will involve:

- attending the introductory session
- completing an online initial and diagnostic assessment which will identify skills gaps, if any
- filling any gaps – it’s possible to do this wholly online
- submitting a practice paper to familiarise yourself with the Functional Skills exam format
- sitting the exam

**I’ve got an A level/degree in Maths/English. Why do I need to do this?**
We’re asking all delivery staff, regardless of prior qualifications, to do Functional Skills. This is mainly so that everyone can be fully familiar with the qualifications which many learners will be undertaking, as well as experiencing the diagnostic assessment and skills development package. There will also be opportunities integrated into the programme to share and develop good practice around embedding.

**What are the benefits to me/my department?**

You’re likely to be maximising your chance of achieving top observation grades, your department’s chance of remaining/becoming outstanding and your learners’ employability skills, as well as gaining a free, valuable and current qualification. From August 2013, all our new teaching and delivery posts will be advertised with a requirement for these qualifications, or for individuals to achieve them upon appointment. It is likely that this will be replicated throughout the sector. Completing these qualifications will give you an early advantage.
Aims of the module

All Functional Skills Mathematics Level 2 programmes aim to:

- promote the development of mathematical skills for home, leisure and work
- reward the achievement of learners for the mathematical skills they have developed
- prepare learners to use mathematical skills in a broad range of familiar and working contexts

This involves:

- understanding routine and non-routine problems in familiar and unfamiliar contexts and situations
- identifying the situation or problems and identify the mathematical methods needed to solve them
- choosing from a range of mathematics to find solutions
- applying mathematics in an organised way to find solutions to straightforward practical problems for different purposes
- using appropriate checking procedures at each stage
- interpreting and communicating solutions to practical problems, drawing simple conclusions and giving explanations

In addition, this programme aims to encourage you to identify where these skills are needed within your job role or the career you are preparing learners for, so that these skills can be developed and valued across the college.

Learning Outcomes

After completing the programme, you should be able to:

- Understand and use positive and negative numbers of any size in practical contexts
- Carry out calculations with numbers of any size in practical contexts, to a given number of decimal places
- Understand, use and calculate ratio and proportion, including problems involving scale
- Understand and use equivalences between fractions, decimals and percentages
- Understand and use simple formulae and equations involving one- or two- step operations
- Recognise and use 2D representations of 3D objects
- Find area, perimeter and volume of common shapes
- Use, convert and calculate using metric and, where appropriate, imperial measures
- Collect and represent discrete and continuous data, using information and communication technology (ICT) where appropriate
• Use and interpret statistical measures, tables and diagrams, for discrete and continuous data, using information and communication technology (ICT) where appropriate
• Use statistical methods to investigate situations
• Use probability to assess the likelihood of an outcome

The programme is flexible and allows you to study at your own pace and according to your own preferences within the following sequence.

1. Attend induction session
2. Complete initial and diagnostic assessment
3. Plug skill gaps through: 1) online packages; and/or 2) one-to-one tuition; and/or 3) scheduled group sessions and/or 4) workbook activities
4. Complete practice assessments
5. Take exam

Participate in English and Maths Professional Practice Discussion bulletin board
Week by week programme outline

All group sessions and tutorials take place during term time from 4.30-6.30 with additional bookable support available during college holiday periods.

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Assessment
Assessment is by a 2 hour paper-based written examination which will take place during w/c 8 July. There will be several times during this week when the exam can be taken. If you are likely to be on leave, we can arrange for you to take the exam earlier.

You will be presented with three different scenarios with questions based around each scenario. All questions are open response type questions and a resource sheet is provided to accompany each assessment paper. You will need to select relevant information from the resource sheet in order to answer the question.

The assessment takes place under invigilation conditions and assessment papers are sent to an external examiner for marking.

Full practice papers are available in the assessment folder of the VLE, as are shorter formative assessments to allow you to build up your skills.

Tutor contact details

You will be assigned to a tutor who will deliver group sessions and be available for bookable individual tutorial support on your specified attendance evening, as well as being available for general guidance and support.

Course resources

The main repository for course resources is the Staff Functional Skills Maths course in the college VLE. Here you can access:

An online package for initial and diagnostic assessment and an individualised skills development programme.

The usual username convention is your initial followed by your surname, all in lowercase, and the default password is password, though you are advised to change this.

You will also find other web-based resources, including videos, factsheets and interactive tests and games.

You will also find a VLE folder for each group session, which includes links to resources used.

For those who prefer a traditional approach, we have the Functional Skills Maths Level 2: Study and Test Practice workbook available to support you.

We are also using an educational social networking site, to hold online professional discussions. Your invitation to join the group is on the course VLE dashboard.
Appendix VII - Sample Induction slides functional skills delivery 2013
Maths

• Three main topics: number, measure and data handling
• Exam w/c 8 July

Online activities

• Go to the **Staff** Functional Skills Maths course in the VLE
• Log in and complete an initial assessment for Maths
• Log in and reply to the two threads you’ll find on the bulletin board
• Make sure your profile is set up to forward emails to your college account
Appendix VIII – Ethics consent form for participants
RESEARCH ETHICS: CONSENT FORM

Full title of Project: PHD ‘Perspectives on teachers numeracy, investigated via comment and conversation'

Name, position and contact address of Researcher:

Mrs Jane E Kay.
C/O university of Bolton

e-mail: jkay@educational institution.ac.uk
Tel: 01254 354380

Please Initial Box

1. I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions.

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving reason.

3. I agree to take part in the above study.

3. I agree to the use of anonymised quotes in publications

Name of Participant ___________________________ Date ___________________________ Signature ___________________________

Name of Researcher ___________________________ Date ___________________________ Signature ___________________________

L:\AQAS\Common\Research\Research Ethics\Sample Consent Form RE5.doc
Appendix IX - LIWC Results for initial investigation stages
**LIWC Results all forum data** The text you submitted was 54775 words in length.

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**LIWC Results HEI prospectus information** The text you submitted was 1464 words in length.

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</tr>
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<td>Big words (&gt; 6 letters)</td>
<td>33.88</td>
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Appendix X – LIWC Results for case study investigation stage
LIWC Results observed comments information.

<table>
<thead>
<tr>
<th>LIWC dimension</th>
<th>Your data</th>
<th>Personal texts</th>
<th>Formal texts</th>
</tr>
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<tbody>
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<td>1.66</td>
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<td>Negative emotions</td>
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<td>2.6</td>
<td>1.6</td>
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<td>Overall cognitive words</td>
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<td>5.4</td>
</tr>
<tr>
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</table>

LIWC Results e-bulletin board information  The text you submitted was 6099 words

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<td>Negative emotions</td>
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<td>1.6</td>
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<tr>
<td>Overall cognitive words</td>
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<td>7.8</td>
<td>5.4</td>
</tr>
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<td>5.0</td>
<td>7.2</td>
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<td>Big words (&gt; 6 letters)</td>
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LIWC Results focus groups information  The text you submitted was 1474 words

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</thead>
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<tr>
<td>Negative emotions</td>
<td>0.95</td>
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</tr>
<tr>
<td>Overall cognitive words</td>
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<td>5.4</td>
</tr>
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<td>Articles (a, an, the)</td>
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<td>5.0</td>
<td>7.2</td>
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<td>Big words (&gt; 6 letters)</td>
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<td>13.1</td>
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</tbody>
</table>
Appendix XI – Critical review of resources
Critical review of resources and information to support the delivery of teachers’ numeracy

The skills for life improvement plan

Information provided by the skills for life improvement plan includes session plans and a set of activities accessed either online or as hard copy to support the acquisition of maths and numeracy skills, or be used to facilitate the testing of these skills, raising awareness of participants of the importance of teachers’ numeracy skills.

This 2 day training plan (Fig 1) is part of the skills for life improvement program training teacher educators to incorporate the minimum core into programs of teacher education in different further and higher education institutions.

(Training plan sample – Fig 1)

The activities are not entirely lacking in context but generally these are simply maths ‘work’ as the example (Fig 1) shows. The ‘skills for life improvement plan’ is a coherent but quite traditionalist approach with the emphasis on actual maths practice and skills of teachers.
The trainer pack (Fig 3) is part of a series of documents which include note-taking pages. This relies heavily on the expertise of the trainer or educator to be of any practical use. The trainer pack provides scaffolds which are useful where the teacher educator is able to encourage discussion and has access to the necessary information to direct and answer questions.

Sample textbooks for students support
Different types of textbooks are available online as well as in hard copy. ‘Primary Mathematics Audit and Test Fourth Edition’ (2014) by Fletcher and Mooney is published by ‘Learning Matters’ in the UK and is part of a series of publications from learning matters on achieving QTS. Another text in the same series from the same publisher is: ‘Passing the Numeracy Skills Test Revised Fifth Edition’ by Mark Patmore (2012)

Again, as with the resources available via the skills for life improvement program, more traditionalist methods are used to support individuals to examine and improve their mathematics and numeracy skills. The samples below (Fig 3 and 4) indicate the type of questions and information available in the text:

**Questions**

1. Calculate these totals without using a calculator:
   
   (a) 1.8 + 2.0 + 0.5  
   (b) 0.4 + 0.04 + 4  
   (c) 2.1 + 0.09 + 7 + 0.9  
   (d) 2.8 + 3.2 − 0.6  
   (e) 0.04 + 1.04 + 0.4  
   (f) 2.01 + 0.09 + 7 + 0.09

2. Calculate these without using a calculator:
   
   (a) 1.4 × 30  
   (b) 0.5 × 0.7  
   (c) 0.4 × 5

3. Write these percentages as fractions in their simplest form:
   
   (a) 2%  
   (b) 25%  
   (c) 85%  
   (d) 12.5%  
   (e) 47%

4. Write these fractions as percentages:

   (a) $\frac{1}{8}$  
   (b) $\frac{13}{25}$  
   (c) $\frac{12}{40}$  
   (d) $\frac{16}{60}$
The 2013 text, 'Teachers' Standards in the Classroom' by Blatchford is a response to the new teacher standards (2012) and addresses each of the elements of the standards in a seemingly straightforward way with questions for the reader within each section as a reflective exercise. This is primarily a text related to the standards document as a whole and provides an interpretation of these rather than advice on skills tests or a concentration on numeracy, it is a generalized response. This is more typical of generalized texts and is not a deficiency in the text, it provides an appropriate response and doesn’t pretend to concentrate on numeracy or mathematics skills.
Another generalized text on achieving QTS demonstrates that literacy and numeracy can be presented in a slightly negative light. This text by Dennis Hayes ‘Learning and teaching in primary schools’ (2007) published by learning matters, provides the following as part of the context of modern education in primary schools:

“As a result of these powerful external requirements dominating the educational agenda, the prospect of failing to meet the necessary standards in mathematics and English (specifically numeracy and literacy) has assumed such significance that it has permeated school life, sometimes at the expense of more creative and spontaneous practice”.

‘The Minimum Core for Numeracy: Audit and Test’ from the achieving QTLS Series (2009) of texts written by Patmore and Woodhouse and published by learning matters is a text intended to support trainee teachers in the post-compulsory sector but was not available via searches originally conducted in 2011. The contents of the text are as follows:
Why do Trainee Teachers need to meet the Minimum Core Requirements?
Skills audit
Number
Algebra
Shape and space
Measures
Handling data
Probability
Extracts from the Minimum Core Numeracy Framework
Answers to key questions

From the contents it is clear that this text examines numeracy skills in the same order as the adult numeracy core curriculum and is clearly aimed at the personal numeracy skills of the individual. The synopsis:

“This book supports trainee teachers in the Lifelong Learning Sector in the assessment of their numeracy knowledge. A self-audit section is included to help trainees understand their level of competence and confidence in numeracy and will help them identify any gaps in their knowledge and skills. This is followed by exercises and activities to support and enhance learning. The book covers all the content of the LLUK standards for the minimum core for numeracy. Coverage and assessment of the minimum core have to be embedded in all Certificate and Diploma courses leading to QTLS and ATLS status’.

Another text taken from the achieving QTLS Series, published by learning matters is: ‘The Minimum Core for Numeracy: Knowledge, Understanding and Personal Skills: Knowledge, Understanding and Practice’ (2009) by Peart is aimed at examining the second part of the minimum core which is the social aspect, where trainee teachers examine factors and barriers affecting the acquisition of numeracy skills. The table of contents clearly demonstrates this:

Introduction
Continuing professional development
Different factors affecting the acquisition and development of number skills
Barriers inhibiting the development of number skills
Principal disabilities and learning difficulties relating to numeracy
Numeracy and participation in public life
Numeracy processes: performing calculations
Numeracy processes: presenting information
A final word
Appendix 1: Glossary of acronyms
Appendix 2: Summary of The Minimum Core for Numeracy requirements
Index

This text was reviewed on www.Amazon.co.uk which indicates that only limited amounts of materials have been available:
“At last, some useful resources to support the Minimum Core! Brilliant, thank you.” (Senior lecturer, Truro College.)

The text ‘Numeracy for QTLS: Achieving the Minimum Core’ by Keeley-Browne and Price (2011) published by Learning Matters aims to cover all sections of the minimum core of numeracy. This is clearly a cover all approach to the minimum core of numeracy, which is clear from the contents:

- Part 1 Barriers to learning
  1 Confronting the issues
  2 The political context
  3 Motivational and social factors
- Part 2 Tools of the trade
  4 Numeracy in the curriculum
  5 You and your learners
  6 Some ideas and preparation for the tests
- Part 3 Number competence
  7 Mental and written calculations
  8 Calculators
  9 Common measures
  10 Shape and space
  11 Handling data
  12 ICT and numeracy
- Appendix Cooperative group work
- Answers

A synopsis for this text is available via www.amazon.co.uk:

This aims to be the first core textbook in the market to support those undertaking initial teacher training in the post-compulsory/learning and skills sector (formerly FE). The text is structured in line with the requirements and specifications of the minimum core and therefore guides students to
achieve the minimum core and pass the new national tests in order to achieve their QTLS qualification.

The synopsis is interesting since the book was not available via the first search for resources in 2011, and has a publication date of 2011, being the first core textbook at that point in time would indicate that very little supporting texts were available when the search (and research) started.


These two texts relate directly to the PTLLS qualification, the first in a suite of teacher education qualifications for the post-compulsory sector. The minimum core of numeracy and the requirement for a level 2 qualification in mathematics or numeracy is not part of this initial qualification and so it’s not entirely surprising that numeracy is not contained in the texts although Gravells has been forward thinking in including some notes on numeracy in this text.

Mentoring trainee teachers is a large part of teacher education and has gained momentum in recent years. Several texts relate to this process, including: Cunningham B (2005) ‘mentoring teachers in post compulsory education – a guide to effective practice’ David Foulton publishers, UK. In this text the idea that a mentor’s work is not undertaken in a vacuum but in context, is one of the themes running through the information presented. However, the context of legislation relating to numeracy skills is not addressed at any point, mathematics or numeracy is not mentioned as part of this subject area or the context for the subject of teaching and learning in any part of the book.

Another mentoring text: Portner (2008) ‘Mentoring new teachers 3rd edition’ Corwin Press, (Sage) USA. This book relates to the USA and to the school teaching system in particular, not surprisingly
this contains no mention of teachers’ numeracy skills, although not applicable to the UK education system, it is useful to have a world stage comparison from this American text.

More generalised texts on the education arena in the UK include: Duckworth and Tummons (2010) Contemporary issues in lifelong learning. Berkshire: Open University Press. This text examined the policy and practice in further education up until its publication in 2005, and so examines past or essentially historical information. This text has a high proportion of information on achieving QTLS status. The term ‘minimum core’ does not appear at all, however an entire chapter is dedicated to ‘Embedding literacy, numeracy and information and communication technology’ relating to vocational education starting on page forty five.

There has been a drive to increase the development of transferable skills in academic courses of education especially with reference to higher education. In the text ‘Transferable skills in higher education’, Assiter A. (Eds) (1988) gives the explanation that transferable skills through academic work are desirable in terms of creating employability skills, or in making a link between the world of learning and the world of work, responding to the needs of employers. The definition of transferable skills provided by Assiter’s text wasn’t entirely fixed, but was described as including ‘problem solving skills’ and ‘critical thinking skills’, with ‘numeracy’ mentioned in a list of more definite skills on page 11.


‘Imprecise, inaccurate and illogical thinking does not help to develop the mental abilities required for higher level academic and professional work.’

‘we use basic thinking skills in everyday life, usually with little difficulty. However, many people find it difficult to apply these same skills automatically to new contexts, such as more abstract problem solving and academic study’. Not a standard teaching text, however this is the type of generalised text that supports trainees during the process of teaching and learning.
Cropley A.J. (2007) ‘Creativity in education and learning, a guide for teachers and educators’. Oxon: Routledge Falmer. Written with a very different focus to many support texts or information texts in teaching and learning as these passages indicate: ‘both mathematical creativity and creative writing require mastery of a set of abstract symbols for representing ideas, although the two symbol systems may be quite different’.

‘Effective novelty can only occur if the cognitive elements such as knowledge skills and divergent thinking are also present’.

This text provided some interesting reading, but as with other texts of this genre, mathematics and numeracy do not feature strongly.

Gardner has become one of the ‘stock’ theorists to examine as part of teacher education. Gardner H (2006) ‘Multiple intelligences, new horizons’. USA: Basic books (Perseus). Gardner argues against the ‘uniform’ school approach as this fosters test and creates a uniform intelligence. He originally ‘identified’ different types of intelligence:

Musical intelligence

Bodily – kinaesthetic intelligence

Logical-mathematical intelligence

Linguistic intelligence

Spatial intelligence

Intrapersonal intelligence

Interpersonal intelligence

The elements of logical mathematical intelligence are not accorded any particular preference over any other sort of intelligence identified although some of Gardner’s comments were interesting:
'everyone should study history and mathematics, but these topics need not to be taught and assessed in a single way to all students.'

Lucas & Claxton (2011) wrote the text: ‘New kinds of smart – how the science of learnable intelligence is changing education’ published by Open University press, Mcgraw Hill Education, Berkshire, UK. Again numeracy is not specifically a focus of this text, more the overall practical experience of teaching and learning in the classroom using examples and with strong reference to ‘habits of mind’. One of the examples presented is a ‘split screen’ lesson in a session in a school where students examine ‘magnets’ and also their ‘questioning' techniques simultaneously.

Learned techniques for improving or expanding intelligence or habits of mind are often shown to be inert in that they do not: ‘come to mind spontaneously when they are needed.’

‘people need a broad range of experiences in which to question, reason, persist and imagine, so those habits of mind become relatively disembedded from specific tasks and materials and more general purpose’.

‘Contemporary issues in lifelong learning’, Duckworth & Tummons (2010) provides examples and case studies relating to numeracy embedded into sessions within different subjects. The embedded numeracy examples provided are actually overt numeracy examples, concentrating on calculation skills, not on wholly embedded underpinning numeracy skills. One example in the text is clearly demonstrating how numerical work can be ‘inserted’ into a history session (contextualised numeracy), but the statement is made that: ‘level 2 numeracy is not ‘naturally’ embedded into history, which is to say it does not occur through the general disciplines history promotes, such as critical analysis’.

Examination board information

Information provided by examining bodies for teacher education providers consists of minimum core centre guides, minimum core summaries, sample schemes of work and integrated parts of guides
for full qualifications. The following sample (Fig 6) is taken from the contents of a B-tec certificate for teacher training at level three (accessed online 23/5/11)

<table>
<thead>
<tr>
<th>Structure of the qualification</th>
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<tbody>
<tr>
<td>Rules of combination</td>
<td>7</td>
</tr>
<tr>
<td>Addressing literacy, language, numeracy and ICT needs in education and training: <em>Defining the minimum core of teachers’ knowledge, understanding and personal skills</em></td>
<td>8</td>
</tr>
<tr>
<td>Signposting key skills in the qualification</td>
<td>8</td>
</tr>
</tbody>
</table>

(Specification contents sample – Fig 6)

When the identified page from the specification for the B-Tec level three is examined, the information related to numeracy is sparse.

The personal skills in language, literacy, numeracy and ICT addressed through this Award will be developed in progressing through the framework to QTLS status and beyond and will allow for functional skills to be incorporated at an appropriate level to suit the delivery of learning through different contexts. For example:

- reading: eg find and select, from a range of reference material and sources of information, including the internet
- writing: eg understand significant features of English spelling and of the contribution of punctuation to meaning in written texts (including the design of teaching and learning resources)
- listening: eg listening attentively and responding sensitively to contributions made by others
- speaking: eg showing the ability to use language, style and tone in ways that suit the intended purpose and audience, and to recognise their use by others.

(Specification numeracy skills information – Fig 7)

This one page of text from this two hundred and eight page document is dedicated to the minimum core, mentioning numeracy skills. However all the example skills given are actually English or literacy skills. In Fig 7 the skills listed are: reading, writing, listening and speaking. This demonstrates that the minimum core of literacy and numeracy has been written into specifications for teacher training courses in the post-compulsory sector, but that the concentration appears to be on the literacy aspect of the core. It also clear to see that with one page of two hundred and eight
pages dedicated to minimum core skills, this has not been written into qualifications in a substantive way.

Teacher educator guides and specifications
Guidance available for teacher educators specifically included an online and hard copy guide to standards in minimum core numeracy, a minimum core handbook, the main Fento guide (specifications) companion guide and an inclusive guide.

SVUK and NRDC both produced guides and documents that related to general teacher education that included minimum core numeracy information. The NRDC publication, 2004 published by Fento, ‘Including Language, Literacy and Numeracy Learning in all Post-16 Education - Guidance on curriculum and methodology for generic initial teacher education programmes’ included specific examples of training strategies for trainees in post-compulsory teacher education:

---

**Sample Teacher Training Activity**

**Diagnosing number errors**

Trainee teachers are given some examples of learners’ number work and asked to identify what errors have been made.

Some examples were:

- **How much would eight hair rollers at 37p each and three packets of perm papers at 45p each cost in total?**
  - Answer: \[8 \times 37 = 308 \]
  - \[3 \times 45 = 135 \]
  - \[438 \]

- **Calculate the value of 3²**
  - Answer: 6

- **Find 15% of 600**
  - Answer: \[\frac{600 \times 100}{15} = 4000 \]
  - \[\frac{1}{15} \]

Following this, trainee teachers are asked to discuss the remedial actions needed in each case.

---

(Sample training activity Fig 8)

SVUK guidance on changes over time, including minimum core requirements:
<table>
<thead>
<tr>
<th>CTLLS</th>
<th>Level 3</th>
<th>P&amp;E</th>
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<tbody>
<tr>
<td>• Explain the role of initial assessment in the learning and teaching process.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Describe different methods of initial assessment for use with learners.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Explain ways of planning, negotiating and recording appropriate learning goals with learners.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Explain ways in which session plans can be adapted to the individual needs of learners.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Identify the strengths and limitations of a range of resources, including new and emerging technologies, showing how these resources can be used to promote equality, support diversity and contribute to effective learning.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Identify literacy, language, numeracy and ICT skills which are integral to own specialist area.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Liaise with other relevant parties to effectively meet the needs of learners.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Apply minimum core specifications in literacy to improve own practice.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Apply minimum core specifications in language to improve own practice.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Apply minimum core specifications in mathematics to improve own practice.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Apply minimum core specifications in ICT user skills to improve own practice.</td>
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</table>

<table>
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<td>• Analyse the role of initial assessment in the learning and teaching process.</td>
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</tr>
<tr>
<td>• Describe and evaluate different methods of initial assessment for use with learners.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Evaluate ways of planning, negotiating and recording appropriate learning goals with learners.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Analyse ways in which session plans can be adapted to the individual needs of learners.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Analyse the strengths and limitations of a range of resources, including new and emerging technologies, showing how these resources can be used to promote equality, support diversity and contribute to effective learning.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Identify literacy, language, numeracy and ICT skills which are integral to own specialist area, reviewing how they support learner achievement.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Identify and liaise with appropriate and relevant parties to effectively meet the needs of learners.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Apply minimum core specifications in literacy to improve own practice.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Apply minimum core specifications in language to improve own practice.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Apply minimum core specifications in mathematics to improve own practice.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Apply minimum core specifications in ICT user skills to improve own practice.</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>DTLLS</th>
<th>Level 4</th>
<th>P&amp;E</th>
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</thead>
<tbody>
<tr>
<td>• Analyse the role of initial assessment in the learning and teaching process.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Describe and evaluate different methods of initial assessment for use with learners.</td>
<td></td>
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</tr>
<tr>
<td>• Evaluate ways of planning, negotiating and recording appropriate learning goals with learners.</td>
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<tr>
<td>• Analyse the strengths and limitations of a range of resources, including new and emerging technologies, showing how these resources can be used to promote equality, support diversity and contribute to effective learning.</td>
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</tr>
<tr>
<td>• Identify literacy, language, numeracy and ICT skills which are integral to own specialist area, reviewing how they support learner achievement.</td>
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</tr>
<tr>
<td>• Identify and liaise with appropriate and relevant parties to effectively meet the needs of learners.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Apply minimum core specifications in literacy to improve own practice.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Apply minimum core specifications in language to improve own practice.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Apply minimum core specifications in mathematics to improve own practice.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Apply minimum core specifications in ICT user skills to improve own practice.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Minimum core requirements Fig 9)

FENTO for DFES (2004) ‘Addressing language, literacy and numeracy in education and training: defining the minimum core of teachers’ knowledge understanding and personal skills. A guide for initial teacher education programmes’ Nottingham: Dfes publications. This document forms the basic specifications for the minimum core of teachers’ knowledge and understanding demanded by the minimum core of literacy, numeracy language and ICT.
Numeracy starts on page twenty four and is arranged in a different way to the literacy elements. Split into two sections: social factors affecting learning and personal skills ends on page thirty six (twelve pages dedicated to numeracy, page six to page twenty one, fifteen pages dedicated to literacy) this document is similar to a full course specification and needs interpretation in a similar fashion. This acts as a syllabus for the minimum core of numeracy in the post-compulsory sector.

Teaching and learning resources

Teaching and learning resources to facilitate the implementation of minimum core numeracy as part of teacher education in the post-compulsory sector are thin on the ground. www.brainboxx.co.uk and www.slidefinder.net both provided resources that introduced and explained the minimum core of numeracy for students in 2011. When checked in 2014, the saved link to resources did not function.

Warwick University is one of the CETT institutions (Centre for excellence in teacher training) and provides information and sample classroom delivery resources with a power-point, booklist and hand-out available to download. All the sample resources relate to literacy rather than numeracy, but information available on the actions undertaken to address numeracy needs of trainee teachers and delivery of the minimum core was more generalised:

Training of teacher trainers from 8 partner organisations who deliver the Diploma in Teaching in the Lifelong Learning Sector (September-October 2007)

Supplying each partner organisation with a pack of teaching materials addressing literacy, language and numeracy development, for use with trainee Diploma students (September-October 2007)

Evaluation of the training events and pack of materials (on-going)

Establishing of a minimum core ‘hub’ and resource repository on the WMCETT website for teacher trainers to access (January 2008)

(accessed online 23/5/11 3/6/14).
Internet searches revealed blogs and forums where teacher educators and trainee teachers could discuss teachers’ numeracy skills and the delivery of teaching and learning in this area, most of which discussed generalised education issues across the world with the main contributions being from the UK and the USA. Loncett provided very general information in a frequently asked questions format for teacher training. Available online at: [http://www.loncett.org.uk/faq.asp?id=56](http://www.loncett.org.uk/faq.asp?id=56) (Accessed 23/5/11)


A website by Ann-Gravells available at [http://www.anngravells.co.uk/minimumcore.html](http://www.anngravells.co.uk/minimumcore.html) gives clear information on the minimum core and provides links to texts – this originated from the search term ‘what is the minimum core’ which did not produce this result in the original search for information in 2011, but did appear in a much later search in 2014, samples of the text available via the website are below:

![Minimum core personal skills checklist (£1.50)](sample_text.png)

(Sample text Fig 10)
Mathematics and numeracy websites

The most fruitful search for resources to support teaching and learning resulted in websites which contained information and resources centred on actual content for individuals to use to support their own numerical skills development or for teacher educators to embed numerical tasks and provide some contextual tasks within the teacher education classroom, helping them to respond to the requirements of the minimum core of numeracy in the post-compulsory sector.

The Centre for Innovation in Mathematics Teaching (CIMT) at the University of Plymouth has developed Lesson Plans for the Mathematics Enhancement Programme (MEP) which has been based on Hungarian teaching strategies and pedagogy. Each Lesson Plan has accompanying copy masters and a corresponding page in a Practice Book. A link to the Lesson Plans and accompanying support material is:

http://www.cimt.plymouth.ac.uk/projects/mepres/primary/default.htm

Cimt Plymouth hosts an on-line international research journal and provides reports on longitudinal international research studies undertaken by CIMT. The Lesson Plans (and other related material)
can be accessed under the Teacher Support Material at:


The School of mathematics and Statistics at the University of Plymouth has produced an online 'library of portable, interactive, web based support packages to help students learn various mathematical ideas and techniques and to support classroom teaching’. It is aimed at students following courses which have a mathematics component. Each unit consists of an introduction, worked examples, exercises and solutions, followed by quizzes to test students’ understanding, with immediate feedback.

http://www.tech.plym.ac.uk/mathematics/latex/latexaid.html

Lesson Plans from Springboard corresponding to the Maths Frameworks can be accessed at:

http://www.standards.dfes.gov.uk/primary/features/mathematics/maths_unit_plans/y1index

The BBC is popular for mathematics and numeracy skills offering key stage three revision lessons:

http://www.bbc.co.uk/schools/ks3bitesize/teachers/lessonplans/#Mathematics

BBC Education provides lesson plans, activities, worksheets and links to related TV and Radio programmes for use by teachers and parents of four to eleven year olds and has lesson plans, activities, worksheets and links to related TV and Radio programme for use by teachers of eleven to sixteen year olds.

http://www.bbc.co.uk/schools/websites/4_11/site/numeracy.shtml

http://www.bbc.co.uk/schools/websites/11_16/site/maths.shtml

It also provides links to the Bitesize revision programmes for key stage three and for GCSE revision:

http://www.bbc.co.uk/schools/teachers/ks4/bitesize_maths.shtml

http://www.bbc.co.uk/schools/archive/

Each page of the BBC website has video and audio clips which can be used to motivate pupils or demonstrate mathematical concepts in real world situations. Teachers need to register first before clips can be downloaded.
Primary Resources can be very useful as several elements of the adult numeracy core curriculum overlap with the national primary strategy and represent the foundations of numerical learning that some adults have missed including trainee teachers:

http://www.primaryresources.co.uk/mathematics/maths.htm

The National Curriculum Online where individuals can view the programmes of study for Key Stages one to four at:

http://www.nc.uk.net/webdav/harmonise?Page/@id=6004&Subject/@id=22

From these pages, you can also see the attainment targets, notes and links to online teaching resources.

Maths Goodies offers free downloadable lessons with accompanying resources.

http://www.mathgoodies.com/lessons/

The following four sites provide links to resources and content that can be said to support numerical learning:

www.kingwoodclc.net/links/links_numeracy.html

www.sheffcol.ac.uk/links/Mathematics/Organisations/

http://www.tagteacher.net/Maths/index.htm

www.spartacus.schoolnet.co.uk/REVmaths.htm

The Primary and Key Stage 3 frameworks for teaching mathematics produced by the DfES are equivalent to schemes of work. These can help with planning to integrate core numeracy tasks into teacher education sessions. The Framework for teaching primary mathematics can be downloaded from:


The Framework for teaching mathematics: Years seven, eight and nine can be downloaded from:


The QCA/DfES have produced ‘Customising Your Curriculum’, which offers guidance on linking the frameworks to the schemes of work for other subjects. Available from:

http://www.qca.org.uk/8530.html
The Nuffield Curriculum Centre has developed schemes of work (including lists of topics to be covered, information about resources and suggested time allocations) for its individual units at Foundation, Intermediate and advanced levels. They can be downloaded from:

www.fsmq.org/resources/schemes-of-work,1346,NA.html checked 12/7/14

The Bristol Maths Team has written a scheme of work to support pupils in Year 7 working at levels two and three of the national curriculum and are available from:

www.bristol-cyps.org.uk/teaching/secondary/maths/schemes.html

The Association of Teachers of mathematics (ATM) offer free resources and free samples of resources for teachers to download or to use online in the classroom. The site also has some articles from its journal, Mathematics Teaching available online from: http://www.atm.org.uk/free-resources/index.html

The London Grid for Learning offers maths and science resources for key stage three and four as well as providing a link for downloading free the BETT 2006 award winning Mathematical Toolkit from Intel/MA, available from:

http://lgfl.skoool.co.uk/index.aspx

The Mathematical Association (MA) provides a variety of resources (booklets, posters, stickers, games, worksheets and videos) for maths teachers from early years to A Level, from:

http://www.m-a.org.uk/resources/publications/other_resources/index.html

The MathProPress Internet Centre for Mathematics Problems identifies and lists all sources of mathematics problems on the internet, as well as providing related information. Available from:

http://www.mathpropress.com/mathCenter.html

Mathsnet has been developed by Brian Dye, Head of Maths at Hewett Comprehensive School in Norwich and includes interactive programs, articles, quizzes, games and puzzles, maths links and reviews of software and books, available at: http://www.mathsnet.net/
Maths Sphere links to free resources, all in pdf format, and includes worksheets, board games, puzzles, instant graph paper and a comprehensive maths dictionary.

http://www.mathsphere.co.uk/resources/

National Library of Virtual Manipulatives (NVLM) is based at Utah State University and is supported by the USA National Science Foundation. It is a library of free, uniquely interactive, web-based virtual manipulatives or concept tutorials, mostly in the form of Java applets, for the mathematics instruction of children from kindergarten to year twelve. It is currently being extended and refined through projects such as the eNLVM, which is developing interactive online learning units for mathematics, the resources available can be accessed from:

http://nlvm.usu.edu/en/nav/vlibrary.html

The Nrich site is based at the University of Cambridge’s School of Education and provides access to a collection of puzzles, games, mathematical problems, articles and activities which provide learning support for very able children of all ages:


The Nuffield Foundation offers downloadable teaching and learning activities at foundation, intermediate and advanced levels, including schemes of work, starters and assignments:

http://www.fsmq.org/resources/

The Royal Statistical Society hosts At School Projects, which aim to improve the teaching and learning of data handling and statistics. A very useful source of data:

http://www.rsscse.org.uk/activities/atschool.asp

Census at school is an international project which collects and disseminates real data across the curriculum for use by teachers and pupils:

http://censusatschool.ntu.ac.uk/
Stats 4 Schools is managed by the independent Office for National Statistics and includes large data sets collected for the Government. It offers free lesson ideas, plans and worksheets for use in the classroom: http://www.stats4schools.gov.uk/

Teacher Net provides access to free KS3 maths resources for the DfES’s Practical Support Pack (including lesson plans, resources, tutorials and video case studies).


The teaching ideas website, hosted by RM, has been created for the teachers and parents of primary-age children. The maths section includes lessons, puzzles, games, investigations, etc. and a simple maths dictionary.

http://www.teachingideas.co.uk/maths/contents.htm

The United Kingdom Maths Trust (UKMT) organises competitions (including the British Maths Olympiad and the UK branch of the International Maths Olympiad) and enrichment activities for schools and colleges. It also runs courses for teachers:

http://www.mathcomp.leeds.ac.uk/

Waldo Maths uses Java (tm) applets to demonstrate different mathematical topics. It covers Key Stage three and GCSE but is mainly aimed at AS/A2 Maths and Further Maths and is available from: http://www.waldomaths.com/
Appendix XII – Glossary of terms
FE............................Further Education
HE.........................Higher Education
ABE...............................Adult basic education
NNS............................National Numeracy Strategy
ICT......................Information Communication Technology
QCA.......................Qualifications Curriculum Authority
NVQ......................National Vocational Qualification
QTLS....................Qualified Teacher learning and Skills
QTS......................Qualified Teacher Status
GCSE......................General Certificate of Secondary Education
VLE........................Virtual learning Environment
OU.........................Open University
TEC........................Technical Education Council
FEFC....................Further Education Funding Council
IFL........................Institute For Learning
GTC........................General Teaching Council
DFES....................Department for Education and Skills
DFEE....................Department for Further Education and Employment
LLUK......................Lifelong learning UK
CPD........................Continuing Professional Development
SVUK....................Standards Verification UK
OFSTED................Office for Standards in Education
PGCE........................Post Graduate Certificate in Education PGDE
DFID....................Department for International Development
Appendix XIII – Prepared data from focus groups (raw, avatars/identity references removed)
Prepared data for focus groups

Better than school' 'not like school' 'Better than we thought' 'more chilled' than we thought it would be

No textbooks being used in lessons – good! I hate maths textbooks

Lecturers ‘not being too serious’ - not what was expected in maths

‘less boring than school’
‘enjoying the lessons more than school’

Games in the class, some students expressed an emphatic liking for playing games and could remember specific games they had done more recently in their maths classes

Still learning things that you already know

spend too long on the easy stuff and not enough time on the harder stuff

Fun lessons
I noticed that there were teacher based worksheets
I did some contextualised work in my class but I thought it was a bit 'contrived' really
‘not being treated like kids’
‘the teacher simplifies everything’
‘the explanations of work are good’
the teacher has ‘a positive attitude’ the teacher is good/great/etc.
‘The teacher is miles better than expected’
I don’t like all this stuff, it feels like fuss, you know like why can’t we just get on with it
Just give me a book and let me take it home and do it myself
It was better than I thought – but I wasn’t expecting much
I hate the thought that I can’t do it – it is a load of crap
I know I have failed that test – I know it
I had to do the level 1 – I couldn’t face the level 2
(teacher) makes it really easy’
(teacher) is friendly and don’t talk down to you [sic].
‘Not stressed'
‘peaceful'
‘understanding’

I love it, I got an A grade at A level I love it, everything in maths is logical
And makes sense I am going to go and do Law at university.

‘Stems from school, because I didn’t know my tables I had to stand on the chair and for everyone, so they could see you got it wrong you got a slap on the leg. so I asked my dad as he loved maths - he said that's
nothing - I came up with an invention in science and went in the lesson and showed the teacher who got him to the front and electrocuted him for being cheeky

Maybe there is something worse than maths then!

I thought that overall it was well produced because there was a lot of different ways of doing things – not just going into class

There must have been things I missed out on because I didn’t know there was a textbook that you could have – I would have done that

I just found it such hard work

It was hard because it is always hard – it was hard at school – it was hard now – it's still hard – nothing is going to change

I am not going to have that eureka moment – it is never going to happen for me

I can get along with it – but I still don’t know if what I’m doing is right – it’s all just guesswork really

No wonder it stems back and goes back to school and the teachers and the environment they don’t understand what is happening at school now primary this needs to have more relevance to the real world

Ridiculed in front of the class. Because you didn't know maths

All the things I had forgotten has now been revised’

‘Sweets’!

The pace of lessons was mentioned by 1 student who felt this was important, lessons don’t go too quickly but have lot in.

A good mixture of ways of doing things, not just one way, like online options, but I wanted to take the test sooner really

There are lots of different things to do

There are hands on activities

Some power point and electronic board

I’ve been us and used the board for some things that we’ve done

Yes fine, but we could do with more ‘extra work’

All the different stuff we do is quite good
We have a laugh sometimes – I like that
Some games

I like the games lessons

I’m glad I didn’t have to go to class

Yes, independent learning taking place for me here!

There was choice – can’t deny that

‘the times and days that it is on, the lesson is good but it’s really hard to go to college for maths on a Friday’

‘………………(teacher) should be stricter in our class because some people can’t concentrate

‘More work to focus on – like extended maths work’

The amount of work done – I don’t think we do enough in the lessons really – not when we have to give

up our free sort of time

The room – computers (not having any)

We don’t do ‘discussion’ no

We just got told – you have to do it – who likes being told what they have to do?

I didn’t need this – I have enough to do

I would rather use my time to get something useful done

More of the same – CPD – no one asks me what I would actually like to do

Some of the people who don’t want to be there just distract the teacher

I want to know different ways to solve problems if I don’t understand the current one

Why do we have to do division in six different ways, why can we not just learn one way and then leave it at that.

I could have done with just doing the test

I didn’t need all this I would rather have just got on with it – I’m not incompetent or something – why could

we not just do the assessment and sit the test?

I don’t feel like I am learning anything

I know more now than before

Some of the things we used to learn with – worksheets and things – felt like they were kids things – the same stuff

that they use for the normal maths lessons
I noticed there were sheets that had ‘teaching’ type things on them – like graphs with numbers of students and things like that

I hated games – I’m not 12!

I’ve not really been to the classes at all

Didn’t make it with the A level because it’s completely different it is such. Jump up from GCSE

He dropped it at A level just couldn’t hack it

It depends on the teacher - if the teacher is good the they like the subject and it means they Achieve

Wouldn't have been able to use that in the job that he wanted to do
I need to do something to get the help for her - a tutor or something for GCSE maths I think that she'll be doing the foundation really

Even now I can go into a class's and say to them do you know what that x is, they don't know what it really is, that it's repeated addition

Primary school is the place where everything starts to go wrong.

Learning starts off in primary school, student was really happy in maths but then when they start to get negative influences and they start to dislike school as a whole - it has a negative effect on that subject as well
When I went to uni all on the corridor it was full of maths things and I said you know I will end up teaching maths because it needs to be broken down into such small pieces to be. Able to understand it

Breaking down into the smallest bits, multiplying one group of two what does that mean is it a fact or is it a thing that needs to be explained and demonstrated

We had a maths teacher who said mean mode and median in funny voices or he'd sing it and it clicked.

Even the ice cream cones get in the way of them learning adding ice creams leads to a discussion on flipping ice cream instead of doing the maths

What do you think about the numberline I had to teach it and it was like why do we have to do it that way.
And we don't seem to do that normal thing that normal sum.

Maths is everywhere, it goes into everything I told them you don't have a special area in your house that's just for maths why do we have to have a Special place at school for maths - it should be everywhere in every classroom in every subject.
Appendix XIV – Corpus coded details for all data
Corpus coded 3 – focus groups

12 coded passages – whole course delivery style
Positive comments (generally) about the delivery style of the course or the format of the course

10 coded passages – comments about the teacher
All positive comments for the teachers of this course – not teachers of maths in general

13 coded passages – prior experience
Generally comparing the course favourably to maths in school – some harrowing individual accounts

8 coded passages – get it over with and take the test
Wanting to avoid attending any actual delivery – these are not generally the same members of staff who feel insecure about maths – these codes relate to staff who feel confident in their ability to pass the test and do not want to engage with the course.

14 coded passages – classroom methods
Codes relating to games and textbooks

16 coded passages – maths feelings
Only one positive comment on maths – overwhelming in negative comments about feelings

6 coded passages – contextualised work
Favourable reports and requests for context in math and numeracy delivery

All forums corpus coding 3

65 coded passages – standards
The majority of these codes indicate a negative opinion, standards for new teachers are too low and low standards in education are perpetuated by underqualified teachers. It is not acceptable for trainee teachers to struggle with numeracy, especially primary trainees who will be responsible for teaching the subject directly. Several of the codes point to professionalism being eroded by teachers who are not competent in basic skills. Poor numeracy and maths skills are not seen as acceptable.

21 coded passages – skills in teaching context
These codes point to numeracy skills being essential for teaching in a general sense and some specific examples are provided – very similar in tone to the comments on standards

23 coded passages – asking for support and guidance
Comments asking for information on the requirements to teach and asking for advice and any available sign-posting to support passing of the numeracy test

28 coded passages - embedding

A strong indication that although there are many individuals who insist that numeracy is necessary (in standards postings for instance) there are also those who believe that there is no numeracy in teaching. English is clearly more important and embedding skills for life in vocational programs is 'irratating'.

22 coded passages – offering support/advice/guidance

Signposting to books, websites and information to support individuals in passing the numeracy QTS tests successfully – responses to the passages asking for support and guidance. Empathy demonstrated

13 coded passages – poor maths skills may be positive

Points to a different trend to all the other postings and codes. Indicators through statements that some teachers may turn a lack of numerical competence or confidence to their advantage – they will have more understanding of the problems that students face in learning in this area.

31 coded passages – scathing – the test is not hard

Standards coding was very similar to these codes – indications that the tests are not difficult for numeracy QTS and that the tests should in fact be harder. Code 198 indicates that the trainees are simply lazy and are able to pass the test but do not put any effort into their first attempts.

64 coded passages – feelings about maths and maths tests

Overwhelming negative feelings about maths demonstrated by these codes. Include feelings of hatred for the test itself and despair at not being able to pass the test.

24 coded passages – attempts at the QTS tests

Codes relate to the number of attempts trainee teachers have taken before passing, or not passing in some cases. All of these codes relate to more than 1 attempt and some codes overlap with ‘feelings’ codes where individuals imply a lack of confidence in maths skills.

24 coded passages – more positive descriptions

Although these posts are more positive – they still have the underlying negative slant in a lot of instances as people express ‘surprise’ at having passed the test – demonstrating that they did not expect to pass and therefore have a negative image of their own maths and numeracy skills.

11 coded passages – the passage of time

These codes indicate that one ‘reason’ that people give for being unsuccessful with maths is the length of time that has passed since they last did any maths.

33 coded passages – general
These codes do have some themes running through that have been missed in the second stage of coding or ‘grouping’. These must be addressed in the final coding stage to resolve so many general codes. For instance several codes indicate that there is an opinion that the tests must be at the beginning (conforming to new legislation) several codes relate to trainees who cannot commence their NQT year as they have not been successful in numeracy.

Observation comments - corpus coding 3

14 coded passages – direct statements of feelings about maths

Included codes that refer back to ‘hatred’ and fear

27 coded passages – avoidance of maths sessions or tests

Avoidance for more than one reason, some feel very confident and just want to take the test, others present a relationship of avoidance with anxiety and negative feelings

12 coded passages – maths in context

A mixture of positive and negative opinions on context

13 coded passages - past experience of maths

Negative past experiences centring on teachers and school maths

10 coded passages – maths tests and exams

Fear of failing and a dread of maths tests.

3 coded passages – learning problems

Mentions of specific maths problems

9 coded passages – forced into maths

Staff members feel a certain amount of compulsion to attend or sign up for maths courses

8 coded passages – positive opinions

Made up of codes relating to staff members who are surprised that they have enjoyed maths lessons and those who have gained confidence from a higher than expected diagnostic score

9 coded passages – difficulty of maths

These codes to be amalgamated with ‘feelings’ codes

9 coded passages – QTS tests for numeracy

Generalised codes revolving around the QTS tests

3 coded passages – general

Non specific codes
Staff bulletin board - corpus coding 3

14 coded passages – sharing good practice

These codes refer to instances of individuals sharing their practice and collaborating

3 coded passages – course flexibility

Positive comments on the construction of the course for functional skills maths and English delivered for staff members

6 coded passages – staff bookings

These codes refer to the number of staff who mentioned that they have booked onto both subjects

25 coded passages - offers of support and guidance

In response to requests for support information or guidance, mostly IT queries relating to the use of the Edmodo bulletin board itself or the VLE

27 coded passages – staff introductions

All staff were asked to formally introduce themselves on the e-bulletin board.

24 coded passages – skills importance

All staff were asked to formally identify the math skills required in their own vocational teaching area

18 coded passages – administration

Codes relating to the generalised administration of the course itself

34 coded passages – examples of maths skills

All staff were asked to formally identify the math skills required in their own vocational teaching area – only a slight difference between this area and the codes for skills importance

13 coded passages – giving technical support

The same as the other codes for giving support in response to requests – wholly IT based

14 coded passages – assessment and maths anxiety

Codes avoiding the maths test if possible, demonstrating anxiety

13 coded passages – positive comments

People expressing their confidence in maths skills or happy with the assessment level diagnosis.

9 coded passages – asking for help or support

Generally IT issues or requests from course administrator for information
10 coded passages – reasoning for study
Staff were asked to provide reasoning for their studies

8 coded passages – using ICT
Examples of staff using ICT to support learning

Corpus coded 3 HEI data

36 coded passages – general conditions of entry only
These codes refer to very generalised criteria and do not include maths or English. Only other elements – a good standard of education for example

15 coded passages – English only
Only English skills are mentioned as an entry requirement

17 coded passages – maths and English
Both subjects are mentioned as an entry requirement, still in a generalised form

6 coded passages – English but not maths

English is very clearly presented as an entry requirement but maths is not also present

6 coded passages – direct level indicators
Clearly indicates the level of maths and/or English required.

11 coded passages – reference to minimum
None of the references were to the minimum core in post compulsory courses

13 coded passages – conditions of entry – alternative to English and maths quals
These codes refer to an alternative being offered – for instance to take initial assessments or diagnostic assessments for maths and English

3 coded passages – maths
Clearly expressed that requirement for maths as course entry

7 coded passages – mentions of QTLS
Mentioned as part of the course on exit

2 coded passages – maths as learning problems

Maths grouped with dyslexia as a need and support offered

20 coded passages – no mentions of maths as entry requirement
Appendix XV – Collated comment codes for forum data
<table>
<thead>
<tr>
<th>Comment [U140]: Personally I didn’t find any of the tests too taxing</th>
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<tbody>
<tr>
<td>Comment [U142]: If I was in any kind of position of power I’d abolish the tests</td>
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<tr>
<td>Comment [U143]: If I was in any kind of position of power I’d abolish the tests</td>
</tr>
<tr>
<td>Comment [U144]: Compulsory nature of the tests</td>
</tr>
<tr>
<td>Comment [U145]: Significant explanation of why spelling grammar etc are not clear in postings</td>
</tr>
<tr>
<td>Comment [U146]: Failed my Numeracy on the 1st attempt - expected it</td>
</tr>
<tr>
<td>Comment [U147]: Asking for support with the numeracy test</td>
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<tr>
<td>Comment [U148]: Offering advice and support on the numeracy test</td>
</tr>
<tr>
<td>Comment [U149]: I passed my numeracy QTS first time</td>
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<td>Comment [U150]: Poor self view of abilities</td>
</tr>
<tr>
<td>Comment [U151]: Poor self view of abilities</td>
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<td>Comment [U152]: Timed maths questions are a struggle</td>
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<tr>
<td>Comment [U153]: Concern that teachers need to have a higher level of knowledge than their students</td>
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<tr>
<td>Comment [U154]: Concern that teachers need to have a higher level of knowledge than their students</td>
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<tr>
<td>Comment [U155]: If teachers can’t spot their errors, how can we expect them to progress to the standards we’re setting them</td>
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<tr>
<td>Comment [U156]: Concern that teachers need to have a higher level of knowledge than their students</td>
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<tr>
<td>Comment [U157]: Maths especially is something that needs to be practiced</td>
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<tr>
<td>Comment [U158]: Maths skills are integral to the profession of teaching</td>
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<tr>
<td>Comment [U159]: Concern that teachers need to have a higher level of knowledge than their students</td>
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<tr>
<td>Comment [U160]: Maths is only useful in a variety of subjects – not English for example</td>
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<tr>
<td>Comment [U161]: QTS nm mixture of stress and boredom</td>
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<td>Comment [U162]: Will not be doing any more sums</td>
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<td>Comment [U163]: Re and nerves of num test press</td>
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<td>Comment [U164]: Not all subjects will include too much in the way of mental maths</td>
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<tr>
<td>Comment [U165]: shocked at poor standards</td>
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<tr>
<td>Comment [U166]: Not all subjects will include too much in the way of mental maths</td>
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<tr>
<td>Comment [U167]: Not all subjects will include too much in the way of mental maths</td>
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<tr>
<td>Comment [U168]: I do think there has to be a way of testing a trainee’s ability at Maths</td>
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<td>Comment [U190]:</td>
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<tr>
<td>Comment [U191]:</td>
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<td>Comment [U192]:</td>
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<td>Comment [U193]:</td>
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<td>Comment [U194]:</td>
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<td>Comment [U195]:</td>
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<tr>
<td>Comment [U196]:</td>
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<tr>
<td>Comment [U197]:</td>
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<tr>
<td>Comment [U198]:</td>
</tr>
</tbody>
</table>
Comment [U204]: Bad school experiences

Comment [U206]: have to get over a mental block with a maths exam - no matter how 'simple' standard

Comment [U208]: standards - maths not good enough

Comment [U210]: test fine - maths horrendous

Comment [U212]: Mental agility related to the NM test

Comment [U214]: Pride in achievement at passing the NM test

Comment [U216]: If I can do it then anyone can!!

Comment [U218]: Struggled to pass GCSE maths 4 times

Comment [U220]: Maths ability related to confidence

Comment [U222]: Not passed after 4 attempts

Comment [U225]: Tests are not hard enough and do not prove anything - they should be harder

Comment [U227]: Cant pass the test and cant work as a teacher because of it

Comment [U229]: Maths is not relevant to teaching

Comment [U231]: Being numerate is essential and having teachers that are not is not good enough - standards

Comment [U233]: Reference to the contextual tasks of teaching any subject requiring numeracy

Comment [U235]: Teachers should be higher level than students

Comment [U237]: The maths test is not hard

Comment [U207]: fear and confidence in maths

Comment [U209]: Campus record is apparently 37 takes of the exam

Comment [U211]: 7 attempts at the test

Comment [U213]: Relief at passing the test

Comment [U215]: I am the world's worst at Maths

Comment [U217]: If I can do it then anyone can!!

Comment [U219]: Not passed second attempt

Comment [U221]: Passage of time since doing maths a hindrance

Comment [U224]: Tests cause panic

Comment [U226]: Happy about passing the test

Comment [U228]: Not able to do maths but would still be a great teacher(?)

Comment [U230]: Cannot pass the test and cannot work as a teacher

Comment [U232]: There is a difference between numeracy and maths

Comment [U234]: Scathing - standards need to be high

Comment [U236]: Passage of time makes things more difficult

Comment [U238]: Teachers see maths skills in context all the time
Comment [U239]: Standards – should be higher

Comment [U240]: Parent appalled by lack of interest in child's numeracy progress

Comment [U241]: Dave had 4 attempts at the numeracy

Comment [U242]: Support for those taking the test

Comment [U243]: I also found the numeracy test difficult

Comment [U244]: I finally passed after six tries

Comment [U245]: I cannot envisage myself passing this daunting numeracy test despite having a PhD

Comment [U246]: There is a small percentage of people, who have problems with mental arithmetics

Comment [U247]: The test is unfair

Comment [U248]: Supporting those students who are struggling with maths test

Comment [U249]: I cannot count fast

Comment [U250]: I don't understand why all teachers are supposed to be fast in numbers

Comment [U251]: I totally breezed the ICT and Literacy tests, but I'm dreading Numeracy

Comment [U252]: I am SHOCKING at anything to do with numbers

Comment [U253]: I'm just not numerically minded at all

Comment [U254]: Worried about employment due to lack of numeracy

Comment [U255]: Schools will miss out on good teachers because they can't pass the maths test

Comment [U256]: Tests should be done before starting the course

Comment [U257]: Poor self perception of maths skills

Comment [U258]: Explanation of a question from the test for maths

Comment [U259]: Support groups set up in uni to help those students struggling with numeracy

Comment [U260]: Standards – not good if the kids are cleverer than the teachers

Comment [U261]: Should do the tests before course

Comment [U264]: Being able to take them before beginning the PGCE seems right to me

Comment [U265]: If you have a good grasp then you should be able to pass the test

Comment [U266]: It then becomes important to brush up on those skills when you will be working with numerical data basically every week as a teacher

Comment [U267]: Is maths and mental agility the same thing

Comment [U268]: Teachers do not understand why students struggle with maths

Comment [U269]: It may not be such a problem that they find arithmetic mental agility difficult. Indeed, it may help them to better understand the difficulties that many pupils experience with mental calculations and lead them to adapt their teaching accordingly.

Comment [U270]: The best maths teachers are not, necessarily, the ones who find maths 'easy'
| Comment [U271]: | having been a teacher for 8 years, I can definitely say that the areas covered in the numeracy test have been useful in teaching and in administration. |
| Comment [U272]: | keep failing test after numerous attempts |
| Comment [U273]: | 5 pupils could answer the questions – standards |
| Comment [U274]: | Surely providers should not be letting people on to courses who do not have basic numeracy skills |
| Comment [U275]: | even more when primary trainees can't pass as they are supposed to be teaching children basic numeracy - how can you teach it if you cannot do it yourself |
| Comment [U276]: | found the maths hard |
| Comment [U277]: | finding it hard means that I am a good maths teacher as I really understand what children find tricky. |
| Comment [U278]: | some of the best maths teachers are those who have found it hard at first. |
| Comment [U279]: | I just panic when asked a maths question |
| Comment [U280]: | it wasn't that I couldn't do the calculation, but that the panic stopped me. |
| Comment [U281]: | Maths and confidence linked |
| Comment [U282]: | Standards – tests are not hard |
| Comment [U283]: | The maths is not challenging at all, just the basic skills required |
| Comment [U284]: | the tests should be taken as a requirement for applying for training |
| Comment [U285]: | so many people failing them on my PGCE |
| Comment [U286]: | If you cannot pass the numeracy test, then I think you have problems |
| Comment [U287]: | doing it repeatedly without success does not make you better unless you identify specific areas in numeracy which are causing you problems. |
| Comment [U288]: | As a Mathematics specialist I know how some primary teachers struggle with teaching numeracy. In fact I have been doing supply in primary schools and have seen how very basic they are at it themselves. |
| Comment [U289]: | most primary teachers do NOT have the necessary numeracy skills themselves and I pity the children as they lose out |
| Comment [U290]: | I find maths tough too |
| Comment [U291]: | Maths and confidence linked |
| Comment [U292]: | Panicat maths tests |
| Comment [U293]: | Personally I would have been embarrassed to fail these tests – standards |
| Comment [U294]: | Anyone who cannot pass these tests (and I would give them three attempts only) really should not be teaching – standards |
| Comment [U295]: | You have to have knowledge and skills and these include BASIC SKILLS – standards |
| Comment [U296]: | test advice to support trainees |
| Comment [U297]: | they are just thick. |
| Comment [U298]: | a couple of attempts to pass the numeracy test |
| Comment [U299]: | I struggled with the mental arithmetic |
| Comment [U300]: I am a secondary teacher so the need for numeracy obviously isn't as great as it is for primary. | Comment [U301]: Because I struggle quite badly with math. |
| Comment [U302]: General advice for trainees. | Comment [U303]: likened the skills test to a surgeon practicing without any medical qualifications—you should not be a teacher without them—standards. |
| Comment [U304]: All teachers HAVE to be competent enough to pass these QTS tests. In fact they should be much harder. | Comment [U305]: If you don't have basic numeracy skills, you must of had issues from previous education. |
| Comment [U306]: Why mathematics is a CORE subject because it embodies multiple intelligences. | Comment [U307]: Person passed on the 37th go. |
| Comment [U308]: Person passed on the 37th go—with no one expects it to take this long to pass the num test. Comment [U309]: Several trainees in my cohort who claimed that Maths was their weakest subject. |
| Comment [U310]: The minimum standard for Primary teaching should be increased to at least grade A in GCSE mathematics. | Comment [U311]: Trainees who scrape a grade C at GCSE and then struggle to pass the Numeracy Skills Test are practically illiterate in my eyes and should not be entrusted with the mathematical education of young people. |
| Comment [U312]: Many times to pass my numeracy test. | Comment [U313]: I hadn't done maths for quite a few years and was out of practice. |
| Comment [U314]: I have struggled with maths ever since Primary school. | Comment [U315]: It did make me panic. |
| Comment [U316]: If you are teaching, especially in primary, you need at least basic literacy and numeracy and I would argue actually you need beyond this level. | Comment [U317]: How can you explain the fundamentals of the four operations to pupils if you do not understand it yourself. |
| Comment [U318]: If you don't have these, it doesn't make you thick but perhaps you need to reconsider teaching as a career—I do not want to see the profession I love being 'dumbed down'. | Comment [U319]: If a person is unable to 'teach themselves' to pass the numeracy/literacy tests in less than 5 attempts then do they really have the skills necessary to teach others? |
| Comment [U320]: Helps you empathise with the students. | Comment [U321]: Needing to take more than 3 numeracy tests should raise alarm bells. |
| Comment [U322]: Standards are not raised simply by higher level qualifications. | Comment [U323]: Telling students they are stupid in maths is unacceptable. |
| Comment [U324]: Understanding demonstrated for trainees struggling with the numeracy tests. | Comment [U325]: Eight attempts to pass the num test. |
| Comment [U326]: Graduates with a high level of education should not take this many attempts to pass the test. | Comment [U327]: Teachers are expected to do a lot of numeracy in their work. |
| Comment [U329]: pupils in classrooms may need empathy but trainee teaches need to live in the real world |
| Comment [U330]: removing those trainees who cannot pass the test would free up jobs for those who can |
| Comment [U331]: The skills needed are so basic I find it quite shocking that people fail so many times |
| Comment [U332]: Basic skills used as a streaming measure |
| Comment [U333]: genuinely forgotten how to do it -- passage of time |
| Comment [U334]: I passed the numeracy test first time |
| Comment [U335]: Maths will be a vital part of your future job |
| Comment [U336]: you need to be excellent in the core subjects otherwise you should not teach. -- for primary teachers |
| Comment [U337]: I think I would be horrified if I was to see some of these people teaching numeracy to children. (those who cannot pass the DUM test) |
| Comment [U338]: Teachers without numeracy are not professional |
| Comment [U339]: I was very anxious |
| Comment [U340]: because I have never considered maths to be my strong point. |
| Comment [U341]: I consider Maths my weaker subject |
| Comment [U342]: Is that not a teachers role after all -- struggling to reconcile the requirements of the numeracy test with the role of the teacher |
| Comment [U343]: Test should be at the beginning |
| Comment [U344]: It worries me a little, I admit, that there are some trainees who cannot pass this test without multiple attempts. |
| Comment [U345]: It casts doubts on the basic level of skills of the teaching profession. |
| Comment [U346]: These are basic skills and if you can't pass the tests within three attempts you shouldn't be allowed to teach. |
| Comment [U347]: If you don't have basic skills how are you supposed to teach somebody else |
| Comment [U348]: I am MORTIFIED that some colleagues need so many attempts to pass these days |
| Comment [U349]: passed them all first time |
| Comment [U350]: providing support by signposting |
| Comment [U351]: giving advice to trainees for DUM test |
| Comment [U352]: I passed my skills tests 1st time and didn't have a problem with them, |
| Comment [U353]: $60 complete the skills test before embarking on training |
| Comment [U354]: there should be a limit on the number of times you can take these tests. |
| Comment [U355]: passed all first time |
| Comment [U356]: I do not consider maths my strongest subject |
| Comment [U357]: It cannot be said that lacking basic skills makes you a better teacher simply because it helps you understand how the children feel. |
Comment [U360]: If that's too big a stretch for anyone, look for an alternative career that doesn't require those basic skills. Teachers should be fit for purpose.

Comment [U361]: Trainees asking for support and advice.

Comment [U362]: Really interesting analogy - no matter what or how you teach them, they're going to miss some bits, ignore some bits, not understand some bits, and forget some bits. So, wait awhile and then re-cover the material and the students will fit in the missing pieces. Think of a jigsaw puzzle. It takes numerous approaches and attempts, and I don't know of anyone who can simply pick up one piece after another and complete the puzzle. Wouldn't be any fun if one did, anyway.

Comment [U363]: TAs should have qualifications, and good ones at that, in English and Maths.

Comment [U364]: promote Teaching Assistants as a professional group.

Comment [U365]: about the importance of BASIC qualifications in literacy and numeracy for TAs here.

Comment [U366]: I got a 'D' grade 1st time round but with lots of work and help of a great tutor at night school - finally got it - the lovely grade 'C' – difficulty with GCSE maths.

Comment [U367]: G.C.S.E at grade C or equivalent qualifications, in some cases, are no guarantee of skills, otherwise why would teacher training students, who already have G.C.S.E.s in core subjects, have to complete competency online exams before they qualify?

Comment [U368]: Maths is a big deal for me.

Comment [U369]: TERRIBLE maths education at school and was left way behind and avoided it for years.

Comment [U370]: I apparently tutors get the same response time after time from students (and teachers alike) they dread maths.

Comment [U371]: GCSE maths and English as the absolute minimum qualification for TAs.

Comment [U372]: someone, who has failed to reach that level in their own education has no place in the education of other peoples' children.

Comment [U373]: I have Level 2 Maths & English- but I feel it was sheer luck that I pressed the correct choices when doing the maths test.

Comment [U374]: How can you get A’s and B’s in all your GCSE’s and an English degree and still get a D in GCSE Maths.

Comment [U375]: The minimum core mentioned as an entry style or definite requirement.
Appendix XVI – Collated comment codes for focus groups
### Delivery Style (Whole Course)

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Praise for course options provided</td>
<td>Like mixed delivery</td>
<td>Like mixed delivery</td>
<td>Like mixed delivery</td>
<td>Like mixed delivery</td>
</tr>
<tr>
<td></td>
<td>Comment [U41]</td>
<td>Comment [U37]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Like online options</td>
<td>Revised all previous learning in these sessions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comment [U21]</td>
<td></td>
<td></td>
<td>Low expectations of the course</td>
<td>Like mixed delivery</td>
</tr>
</tbody>
</table>

### Comments on the Teacher

<table>
<thead>
<tr>
<th>Comment [U16]</th>
<th>Comment [U15]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive teacher comment – characteristics or practice</td>
<td>Positive teacher comment – characteristics or practice</td>
</tr>
<tr>
<td>Comment [U23]</td>
<td>Comment [U17]</td>
</tr>
<tr>
<td>Positive teacher comment – characteristics or practice</td>
<td>Positive teacher comment – characteristics or practice</td>
</tr>
<tr>
<td>Comment [U22]</td>
<td>Comment [U14]</td>
</tr>
<tr>
<td>Positive teacher comment – characteristics or practice</td>
<td>Positive teacher comment – characteristics or practice</td>
</tr>
<tr>
<td>Comment [U75]</td>
<td></td>
</tr>
<tr>
<td>Positive teacher comment – characteristics or practice</td>
<td></td>
</tr>
</tbody>
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### Prior Experience

<table>
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<tr>
<th>Comment [U68]</th>
<th>Comment [U12]</th>
<th>Comment [U79]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement is dependant on the teacher</td>
<td>Being treated as adults</td>
<td>Compared favourable to school maths</td>
</tr>
<tr>
<td>Comment [U1]</td>
<td>Comment [U34]</td>
<td>Comment [U36]</td>
</tr>
<tr>
<td>Compared favourable to school maths</td>
<td>Compared favourable to school maths</td>
<td>Negative school experience</td>
</tr>
<tr>
<td>Comment [U5]</td>
<td>Comment [U73]</td>
<td>Comment [U71]</td>
</tr>
<tr>
<td>Compared favourable to school maths</td>
<td>Negative influences from school</td>
<td>Prior learning is a problem</td>
</tr>
<tr>
<td>Compared favourable to school maths</td>
<td>Compared favourable to school maths</td>
<td>Compared favourable to school maths</td>
</tr>
</tbody>
</table>

### Get it over with and take the test
### Classroom Methods

- **Comment [U47]:** Games in the class seen as a positive thing
- **Comment [U47]:** Games in the class seen as a positive thing
- **Comment [U2]:** No textbooks being used to teach seen as a good thing
- **Comment [U3]:** Hate maths textbooks
- **Comment [U77]:** A rigid teaching method from elsewhere in comparison
- **Comment [U6]:** Games in the class seen as a positive thing
- **Comment [U48]:** Games in the class seen as a positive thing
- **Comment [U53]:** Teacher control is required

### Maths Feelings

- **Comment [U28]:** Wold have avoided if possible
- **Comment [U32]:** Maths is guesswork
- **Comment [U31]:** Accepting a poor and negative self perception of maths ability
- **Comment [U58]:** Dislike giving up time to learn maths
- **Comment [U64]:** Negative/di – re-learninglike
- **Comment [U57]:** Feels forced to do the maths course
- **Comment [U55]:** Negative/di – re-learninglike
- **Comment [U54]:** Negative/di – re-learninglike
- **Comment [U56]:** Lack of equipment
- **Comment [U33]:** Negative environment e

**Comment [U70]:** Students lacking maths awareness
contextualised work

<table>
<thead>
<tr>
<th>Comment [U47]: Maths theory notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment [U10]: Contextualised work in class</td>
</tr>
<tr>
<td>Comment [U11]: Contextualised work in class</td>
</tr>
<tr>
<td>Comment [U80]: Context for maths is good</td>
</tr>
<tr>
<td>Comment [U66]: Contextualised work in the session</td>
</tr>
<tr>
<td>Comment [U35]: Need more context</td>
</tr>
</tbody>
</table>
Appendix XVII – Collated comment codes for participant observation
<p>| Comment [U1]: Questioning reasoning | Comment [U2]: surprise |
| Comment [U3]: powerful | Comment [U4]: direct statement-fear |
| Comment [U5]: terrible maths teacher | Comment [U6]: negative past experience |
| Comment [U7]: direct statement-humiliation | Comment [U8]: hated maths teacher |
| Comment [U9]: negative past experience | Comment [U10]: direct statement-hatred |
| Comment [U11]: non-commital, not positive or negative | Comment [U12]: non-commital, not positive or negative |
| Comment [U13]: indication of a negative past school experience | Comment [U14]: put off by school maths |
| Comment [U15]: direct statement-hatred | Comment [U16]: direct statement-physical description-cringing |
| Comment [U17]: attempt to get out of maths lessons | Comment [U18]: already qualified—attempt to get out of lessons |
| Comment [U19]: attempt to get out of maths lessons | Comment [U20]: already qualified—attempt to get out of lessons |
| Comment [U21]: feels forced into maths lessons | Comment [U22]: attempt to get out of maths lessons |
| Comment [U23]: attempt to get out of maths lessons | Comment [U24]: attempt to get out of maths lessons—going to do English first |
| Comment [U25]: indication that completing against their will | Comment [U26]: dreading maths exam |
| Comment [U27]: direct statement-hatred | Comment [U28]: maths is a difficult subject |
| negative presentation of maths examination questions | Comment [U29]: specific maths problem |
| Comment [U30]: mention of dyscalculia | Comment [U32]: maths is pointless |
| Comment [U33]: can't remember maths | Comment [U34]: maths has no use in real life |
| Comment [U35]: would not use maths in real life | Comment [U36]: someone else to do the maths |
| Comment [U37]: dependent on the mathsteacher | Comment [U38]: a good teacher makes the difference |</p>
<table>
<thead>
<tr>
<th>Comment [U63]:</th>
<th>Some can't do maths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment [U64]:</td>
<td>Avoiding doing the higher level</td>
</tr>
<tr>
<td>Comment [U65]:</td>
<td>Afraid of failing</td>
</tr>
<tr>
<td>Comment [U66]:</td>
<td>Avoiding doing the classes by just taking the test</td>
</tr>
<tr>
<td>Comment [U67]:</td>
<td>Can't do maths</td>
</tr>
<tr>
<td>Comment [U68]:</td>
<td>Avoiding completing the maths classes or tests</td>
</tr>
<tr>
<td>Comment [U69]:</td>
<td>Avoiding doing the math classes</td>
</tr>
<tr>
<td>Comment [U70]:</td>
<td>Avoiding doing going to maths classes</td>
</tr>
<tr>
<td>Comment [U71]:</td>
<td>Avoiding doing going to maths class</td>
</tr>
<tr>
<td>Comment [U72]:</td>
<td>To avoid going to maths classes</td>
</tr>
<tr>
<td>Comment [U73]:</td>
<td>Have to learn new things in maths</td>
</tr>
<tr>
<td>Comment [U74]:</td>
<td>Receiving pressure for attending maths classes</td>
</tr>
<tr>
<td>Comment [U75]:</td>
<td>Students who don’t attend don’t achieve</td>
</tr>
<tr>
<td>Comment [U76]:</td>
<td>Students who attend are successful</td>
</tr>
<tr>
<td>Comment [U77]:</td>
<td>A negative presentation of the maths courses on offer</td>
</tr>
<tr>
<td>Comment [U78]:</td>
<td>Some disgruntled people hinted at here</td>
</tr>
<tr>
<td>Comment [U79]:</td>
<td>Maths courses are not popular</td>
</tr>
<tr>
<td>Comment [U80]:</td>
<td>A lot of pressure in QTS tests</td>
</tr>
<tr>
<td>Comment [U81]:</td>
<td>Avoiding fear of failing maths</td>
</tr>
<tr>
<td>Comment [U82]:</td>
<td>Feeding more failure as this has already been experienced</td>
</tr>
<tr>
<td>Comment [U83]:</td>
<td>Can’t get maths at all</td>
</tr>
<tr>
<td>Comment [U84]:</td>
<td>QTS tests are hard</td>
</tr>
<tr>
<td>Comment [U85]:</td>
<td>The maths QTS tests are the worst</td>
</tr>
<tr>
<td>Comment [U86]:</td>
<td>Mental maths is difficult</td>
</tr>
<tr>
<td>Comment [U87]:</td>
<td>QTS tests were not a problem</td>
</tr>
<tr>
<td>Comment [U88]:</td>
<td>QTS tests are just a hurdle to get over</td>
</tr>
<tr>
<td>Comment [U89]:</td>
<td>Some students expressed difficulties with the tests</td>
</tr>
<tr>
<td>Comment [U90]:</td>
<td>Tests were no problem</td>
</tr>
<tr>
<td>Comment [U91]:</td>
<td>Other students fretting about the tests</td>
</tr>
<tr>
<td>Comment [U92]:</td>
<td>Other students struggling</td>
</tr>
<tr>
<td>Comment [U93]:</td>
<td>Other students had to take the tests more than once before passing</td>
</tr>
<tr>
<td>Comment [U94]:</td>
<td>No good as a teacher if you can’t pass the numeracy tests</td>
</tr>
</tbody>
</table>
Appendix XVIII – Collated comment codes for e-bulletin board
staff introductions

skills importance

administration
examples of maths skills

giving technical support

assessment and maths anxiety
positive comments

Comment [U19]: Avoiding maths class
Comment [U18]: Positive comment on English classroom practice
Comment [U67]: Looking forward to maths class
Comment [U86]: Enjoyed maths
Comment [U160]: Maths is favourite subject
Comment [U67]: Attended maths
Comment [U142]: Revision maths a good idea
Comment [U133]: Happy with assessment result
Comment [U197]: Student going to use what they have seen in the classroom (English)
Comment [U159]: Relieved at assessment level
Comment [U165]: Happy with assessment result
Comment [U66]: Maths teacher was good
Comment [U65]: Hoping for an insight in learner maths skills

asking for help or support

Comment [U56]: Asking for technical advice on PC use
Comment [U122]: Asking for technical information
Comment [U83]: Asking for responses
Comment [U122]: Asking for technical information
Comment [U25]: Asking for contributions
Comment [U142]: Asking for responses
Comment [U14]: Taking up tutorial offer
Comment [U26]: Generating responses
Comment [U124]: Invitation to join
Comment [U58]: Technical help request

reasoning for study

Comment [U139]: Reasoning for studying maths
Comment [U138]: Reasoning for studying maths
Comment [U132]: Reasoning for studying maths
Comment [U131]: Reasoning for studying maths
Comment [U144]: Reasoning for studying maths
Comment [U137]: Reasoning for studying maths
Comment [U136]: Reasoning for studying maths
Comment [U135]: Reasoning for studying maths
Comment [U127]: Reasoning for studying maths
using ICT
Appendix XIX – Collated comment codes for HEI institutions prospectus data
corpus coded 2 HEI data

general conditions of entry

condition of entry - English
condition of entry - maths and English

Comment [U62]: Condition of entry – literacy and numeracy
Comment [U86]: Condition of entry – maths and English
Comment [U37]: Condition of entry – literacy and numeracy
Comment [U48]: Condition of entry – maths and English
Comment [U46]: Condition of entry – literacy and numeracy
Comment [U47]: Condition of entry – maths and English
Comment [U59]: Condition of entry maths and English
Comment [U91]: Condition of entry – English and numeracy
Comment [U115]: Condition of entry maths and English
Comment [U115]: Condition of entry maths and English
Comment [U77]: Condition of entry – maths and English
Comment [U75]: Condition of entry – maths and English
Comment [U54]: Condition of entry – literacy and numeracy
Comment [U59]: Condition of entry – literacy and numeracy
Comment [U42]: Condition of entry – literacy and numeracy
Comment [U51]: Condition of entry – literacy and numeracy
Comment [U55]: Condition of entry – literacy and numeracy

condition of entry - english but not maths

Comment [U31]: English essential – maths can be developed
Comment [U94]: Alternative condition of entry – completion of English and maths by the end of the first year
Comment [U97]: Alternative condition of entry – completion of maths by the end of the first year
Comment [U73]: Offering English certificate in conjunction with main certificate/qualification
Comment [U102]: Alternative condition of entry – completion of maths by the end of the first year English on entry
Comment [U58]: English required on entry

condition of entry - level indicators

Comment [U20]: Direct level indicator for numeracy
Comment [U19]: Direct level indicator for English
Comment [U30]: Direct level indicator – maths
Comment [U9]: Direct level indicator for English
Comment [U12]: Direct level indicator for literacy and numeracy
Comment [U29]: Direct level indicator English
reference to 'minimum'

Comment [U50]: Minimum reference – not in context of minimum core

Comment [U1]: Minimum reference – not in context of minimum core

Comment [U98]: Minimum reference – not in context of minimum core

Comment [U100]: Minimum reference – not in context of minimum core

Comment [U80]: Minimum reference – not in context of minimum core

Comment [U50]: Minimum reference – not in context of minimum core

Comment [U85]: Minimum reference – not in context of minimum core

conditions of entry - alternatives

Comment [U49]: Work towards maths and English

Comment [U49]: Work towards maths and English

Comment [U60]: Alternative condition of entry for maths and English

Comment [U66]: Alternative Condition of entry – literacy and numeracy - test

Comment [U76]: Equivalents not acceptable

Comment [U78]: Alternative Condition of entry – maths and English – work towards

Condition of entry - maths

Comment [U88]: Condition of entry – maths

Comment [U10]: Mention of numeracy

Comment [U89]: Very clear and thorough information on maths and numeracy requirements with a clear indication that this is an entry requirement
mention of QTLS

Comment [U1]: QTLS mentioned
Comment [U7]: QTLS mentioned
Comment [U70]: QTLS referred to
Comment [U10]: QTLS referred to
Comment [U71]: QTLS mentioned
Comment [U114]: QTLS mentioned

learning problems

Comment [U64]: Support for lack of skills available
Comment [U63]: Numeracy needs equated with dyslexia
Comment [U126]: No mention of maths or numeracy entry requirements

no mention of maths as entry requirement

Comment [U108]: No mention of maths or numeracy entry requirements
Comment [U107]: No mention of maths or numeracy entry requirements
Comment [U106]: No mention of maths or numeracy entry requirements
Comment [U105]: No mention of maths or numeracy entry requirements
Comment [U113]: No mention of maths or numeracy entry requirements
Comment [U122]: No mention of maths or numeracy entry requirements
Comment [U117]: No mention of maths or numeracy entry requirements
Comment [U118]: No mention of maths or numeracy entry requirements
Comment [U123]: No mention of maths or numeracy entry requirements
Comment [U124]: No mention of maths or numeracy entry requirements
Comment [U112]: No mention of maths or numeracy entry requirements
Comment [U111]: No mention of maths or numeracy entry requirements
Comment [U119]: No mention of maths or numeracy entry requirements
Comment [U125]: No mention of maths or numeracy entry requirements
Comment [U120]: No mention of maths or numeracy entry requirements
Comment [U129]: No mention of maths or numeracy entry requirements
Comment [U128]: No mention of maths or numeracy entry requirements
Better than school’ ‘not like school’ ‘Better than we thought’ ‘more chilled’ than we thought it would be

No textbooks being used in lessons – good! I hate maths textbooks Lecturers ‘not being too serious’ –

not what was expected in maths 'less boring than school' ‘enjoying the lessons more than school’ Games

in the class, some students expressed an emphatic liking for playing games and could remember specific
games they had done more recently in their maths classes Still learning things that you already know
spend too long on the easy stuff and not enough time on the harder stuff Fun lessons I noticed that there
were teacher based worksheets I did some contextualised work in my class but I thought it was a bit
‘contrived’ really ‘not being treated like kids’ ‘the teacher simplifies everything’ ‘the explanations of work
are good’ the teacher has ‘a positive attitude’ the teacher is good/great/etc. ‘The teacher is miles better
than expected’ I don’t like all this stuff, it feels like fuzz, you know like why can’t we just get on with it Just
give me a book and let me take it home and do it myself It was better than I thought – but I wasn’t
expecting much I hate the thought that I can’t do it – it is a load of crap I know I have failed that test –
I know it I had to do the level 1 – I couldn’t face the level 2 (teacher) makes it really easy’ (teacher) is
friendly and don’t talk down to you [sic]. ‘Not stressed’ ‘peaceful’ ‘understanding’ I love it, I got an A grade
at A level I love it, everything in maths is logical And makes sense I am going to go and do Law at
university. ‘Stems from school, because I didn't know my tables I had to stand on the chair and for
everyone, so they could see you got it wrong you got a slap on the leg. so I asked my dad as he loved
maths - he said that’s nothing - I came up with an invention in science and went in the lesson and showed
the teacher who got him to the front and electrocuted him for being cheeky Maybe there is something
worse than maths then! I thought that overall it was well produced because there was a lot of different
ways of doing things – not just going into class There must have been things I missed out on because I
didn’t know there was a textbook that you could have – I would have done that I just found it such hard
work It was hard because it is always hard – it was hard at school – it was hard now – it’s still hard –
nothing is going to change I am not going to have that eureka moment – it is never going to happen for
me I can get along with it – but I still don’t know if what I’m doing is right – it’s all just guesswork really

No wonder it stems back and goes back to school and the teachers and the environment they don’t understand what is happening at school now primary this needs to have more relevance to the real world

Ridiculed in front of the class. Because you didn’t know maths All the things I had forgotten has now been revised’ ‘Sweets’! The pace of lessons was mentioned by 1 student who felt this was important, lessons don’t go too quickly but have lot in. A good mixture of ways of doing things, not just one way, like online options, but I wanted to take the test sooner really There are lots of different things to do

There are hands on activities Some power point and electronic board I’ve been us and used the board for some things that we’ve done Yes fine, but we could do with more ‘extra work’ All the different stuff we do is quite good We have a laugh – I like that Some games I like the games lessons I’m glad I didn’t have to go to class Yes, independent learning taking place for me here! There was choice – can’t deny that ‘the times and days that it is on, the lesson is good but it’s really hard to go to college for maths on a Friday’ ‘……………….(teacher) should be stricter in our class because some people can’t concentrate ‘More work to focus on – like extended maths work’ The amount of work done – I don’t think we do enough in the lessons really – not when we have to give up our free sort of time The room – computers (not having any) We don’t do ‘discussion’ no We just got told – you have to do it – who likes being told what they have to do? I didn’t need this – I have enough to do I would rather use my time to get something useful done More of the same – CPD – no one asks me what I would actually like to do Some of the people who don’t want to be there just distract the teacher I want to know different ways to solve problems if I don’t understand the current one Why do we have to do division in six different ways, why can we not just learn one way and then leave it at that. I could have done with just doing the test I didn’t need all this I would rather have just got on with it – I’m not incompetent or something – why could we not just do the assessment and sit the test? I don’t feel like I am learning anything I know more now than before Some of the things we used to learn with – worksheets and things – felt like they were kids things – the same
stuff that they use for the normal maths lessons I noticed there were sheets that had 'teaching' type things on them – like graphs with numbers of students and things like that I hated games – I'm not 12! I've not really been to the classes at all Didn't make it with the A level because it's completely different it is such. Jump up from GCSE He dropped it at A level just couldn't hack it It depends on the teacher – if the teacher is good the they like the subject and it means they Achieve Wouldn't have been able to use that in the job that he wanted to do I need to do something to get the help for her - a tutor or something for GCSE maths I think that she'll be doing the foundation really Even now I can go into a class's and say to them do you know what that x is, they don't know what it really is, that it's repeated addition Primary school is the place where everything starts to go wrong. Learning starts off in primary school, student was really happy in maths but then when they start to get negative influences and they start to dislike school as a whole - it has a negative effect on that subject as well When I went to uni all on the corridor it was full of maths things and I said you know does that mean is it a fact or is it a thing that I will end up teaching maths because it needs to be broken down into such small pieces to be. Able to understand it Breaking down into the smallest bits, multiplying one group of two what needs to be explained and demonstrated We had a maths teacher who said mean mode and median in funny voices or he'd sing it and it clicked. Even the ice cream cones get in the way of them learning adding ice creams leads to a discussion on flipping ice cream instead of doing the maths What do you think about the numberline I had to teach it and it was like why do we have to do it that way. And we don't seem to do that normal thing that normal sum. Maths is everywhere, it goes into everything I told them you don't have a special area in your house that's just for maths why do we have to have a Special place at school for maths - it should be everywhere in every classroom in every subject.