Perceptions, characteristics and examination grades of adults (19+) Studying GCSE Mathematics in Further Education (FE) Colleges in England

Insights, outcomes and reflections: a personal perspective

By

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Who are the adults (19+) on GCSE maths courses?

Numbers:

- Over 30,600 in 2020 in England and Wales (Gov.UK, 2020); approx. 10% of the total
- Colleges: FE, 6th Form, Vocational/Specialist plus community and union provision

Characteristics:

- Split by age: 45% were 19 to 24 years (had a break/continuing the struggle/ traditional pathway in education), 55% were 25+ (lifelong learners/non-traditional pathways in education)
- Split by gender: 1/3 male, 2/3 female
- Split by English speakers and those whose first language is not English- unknown
- Some need the qualification for onward journeys, some want it for personal reasons

Who are the adults (19+) on GCSE maths courses?

GCSE experience- some:

- Re-take students who have failed previously, some already on degree courses
- Passed, but did not get the required grade, i.e., grade 6 for engineering, grade 5 for midwifery…

No GCSE maths experience:

- Those who missed out on GCSE maths at 16 yrs (left school early, 'no show', in other settings,…)
- Migrants into UK- unfamiliar with the UK systems, need qualifications for life and work

Additional:

- Most on Foundation Tier (grades 1-5): those who need a grade 6 or better need Higher Tier (grades 1-9)
- Free for most, regardless of age or UK status! If you already have a pass (grade 4 or C), you must/should pay.

Self-efficacy vs Anxiety and Grades: based on median values

High self-efficacy/Low anxiety: **Nine responses** **Grades: 2 x grade 3; 3 x grade 4; 4 x grade 5+**	**High self-efficacy/High anxiety:** **One response** **Grades: 1 x grade 5+**
Low self-efficacy/Low anxiety: **Two responses** **Grades: 1 x grade 3; 1 x grade 4**	Low self-efficacy/High anxiety: Nine responses Grades: 2 withdrawn; 4 x grade 3; 3 x grade 4

Insights: Responses to assessment section

- There were 5 statements in this section: tests, exams (maths and other), homework, quizzes.
- 75% of the sample ranked assessment as the most concerning of the three sections (16/21)

- Anxiety responses were more negative than self-efficacy for most participants, so their anxiety responses did not reflect their belief in their ability
- Maths tests were seen as almost as anxiety causing as the final exam
- Maths exams caused more anxiety than other exams for half of the sample
- Language used in comments: ‘nervous’, ‘panic’, ‘terrifying’; negative impact on thinking and performance of timed testing; evidence from one participant of exam anxiety

Insights: Responses to course content statements

- Five statements on times table usage, drawing charts and graphs, %, fractions, a word problem, (algebra)
- A word problem involving a two-step process was ranked the lowest in self-efficacy and the highest anxiety for most, especially those with grade 4 or below
- Algebraic statements came second, behind the word problem. Confidence in ability and lower anxiety with algebra was linked to grades 5+.
- Concern was raised about starting new topics in class. There was a link between anxiety about new topics, poor retention and low pass grades. Some comments referred to fears about algebra
- Individuals had very different opinions of the other topics, so evidence of ‘spiky profiles’ on drawing activities, %s and fractions

Insights: Responses to classroom statements, comments and characteristics

- Five statements on starting a new topic, listening to the teacher, watch a teacher work an algebra problem, listen to a student explain a solution, ask a question in class
- The most able student, as judged by their exam score, could not ask a question in class, nor could two others…
- Several participants referred to innate ability in maths ☹

- Males (3/21) were just as anxious as females (18/21) and more likely to make comments
- Younger learners (4/21), 19 to 24 years, were less likely to pass than older, 25+ (17/21). Also, they did not make comments, which the 25+ did
- Pass rates for adults usually higher then 16-18-year-olds, so good for colleges' stats to have adults in the mix. In this study 12/21 passed, but ¾ ESOL/EAL people passed (the fourth withdrew)

Insights: Changes between two data collections for ten participants

- Overall, perceptions altered relatively little during the courses

- Some of the participants came in with relatively high self-efficacy and low anxiety. The perceptions of these changed very little and they were most likely to pass
- Some participants' perceptions did alter for the better during the course, but that was not always linked to a pass grade

- 'Spikey profiles', and a belief in innate ability persisted
- One participant's perceptions declined sharply during the course- s-e declined and anxiety rose- exam anxiety?

Outcomes and reflections

- When I started teaching GCSE maths in FE, over 10 years ago, I surveyed learners about their perceptions of maths and exams with a single attitude scale on an A5 piece of paper, because I thought it would be cathartic for learners to express their feelings: a psychological benefit for them. There was evidence for this in previous research

- Now I know that doing a short survey will be just as useful for me as their teacher, and I need to survey twice, in September, and in January. If learners need something special to help them cope with the pressure of exams, that needs to be at the exam boards by 31st January. This finding led to the anxiety section on the 'new' questionnaire

- Participants were less anxious when studying topics in which they had confidence in their ability. If I know where learners' confidence in their ability lies or does not lie, I will also know when to go more carefully in class because I will be dealing with raised anxiety. Hence the self-efficacy section on the 'new' questionnaire

Outcomes and reflections

- I need to share that whilst those with high self-efficacy and low anxiety often passed the exam, and those with lower s-e and high anxiety were less likely to pass, there were exceptions in both camps, so it is NOT a ‘done deal’

- As a teacher, I need to spend more time on interpretation of word-based exam questions, especially those with more than one step (and mark in the exams!).
- I need to be aware of and challenge personal stereotypical assumptions- mine lurk in gender!

- The link between pass rates and algebra is worrying and requires careful thought, especially if substantiated by a larger study. From what I have seen over the last 10 years, too much focus on algebra/abstract notation can affect attendance and retention! Many of our learners are in the borders of passing or failing. More paired work to lighten the cognitive load?

Questionnaire content (This worked for me!)

- Self-efficacy: very confident, quite confident, don't know, I don't think I can do this, I can't do this
- Use a times table grid to work out 7x9; drawing charts and graphs; working out 12% of £42; working out two thirds of £42; working out a word problem, such as 'if it takes 3 people 5 days to fit a kitchen, how long will it take 2 people?', solve an algebraic equation, such as 'if 3x-2=7, what is the value of x?' Lastly, 'ask a question in class about something you have not understood'
- Anxiety: no anxiety, some anxiety, moderate…,quite a bit…, high…
- Thinking about an upcoming test one day before, taking the final maths exam at the end of your course, and taking other exams that are not maths
- Section for comments
- Learners or you can score each part from 1-5 and get a total score. Allow discussion and sharing to add to sense of peer support, community and identity?
- The fun part- the analysis! Then action points…

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