"But even our Mam said I'm thick"- Promoting Self-Efficacy in Literacy and Numeracy

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Can meta-learning impact the attitudes, behaviour's, and attainment of English and maths GCSE re-sit students in FE?

Abstract

This paper describes a study of 20 post-16 Further Education (FE) learners undertaking compulsory General Certificate of Secondary Education (GCSE) Maths and English resits. The FE institution is based in a region of North East England with one of the highest levels of income deprivation in the country (gov.uk, 2019). Many of the learners present with little confidence, low motivation and a lack of engagement.

The study involves the delivery of five meta-learning sessions. These are based on the work of Blackwell, Trzesniewski & Dweck (2007) which encouraged students to rethink their own abilities and beliefs. The paper presents an account of students' behaviours and attitudes to learning before and after taking part in the meta-learning programme.

Preliminary survey results indicate that 65% would not persevere with a task they found challenging. Whilst 60% agreed that when they worked hard at something, it made them feel as though they were 'not very smart'. Anonymously disclosed personal circumstances, include: mental health difficulties; additional learning needs; young carers and looked after children. Observations recorded throughout the study include positive changes in some attitudes and work ethic. For example, an increase in the submission of independent work and attendance to extra sessions.

Keywords: GCSE FE maths English resit

Introduction

As practitioners working in an FE College in the North East of England, we often encounter students with very low levels of attainment in literacy and numeracy. Many students report personal issues which impact upon all other areas of their study. Such issues include, drug and alcohol misuse, personal abuse, domestic violence and anxiety and often manifest themselves in terms of anger towards the system, negative attitudes towards teachers, anxiety and low thresholds of tolerance. The work of Freire (1970, p.34) highlights how students "realise that the educational system today-from Kindergarten to University- is their enemy." Fifty years on Freire's assertion still holds, reflecting the views of disadvantaged learners today with alarming accuracy. This offers an explanation for the views and behaviours of the learners we encounter everyday as practitioners delivering maths and English GCSE re-sit programmes.

Research into cause and effect, to better understand the primary cause, could reveal if low level literacy is a catalyst for other issues or vice versa. Our research aims to investigate the educational consequences of these issues, through implementing pedagogical interventions designed to enable students to develop strategies to overcome their educational challenges. The study also aims to highlight that challenge and struggle can be positive experiences by emphasising how we can learn best from challenge. Drawing upon the work of Blackwell, Trzesniewski & Dweck (2007), we have planned and delivered a series of five taught sessions focusing on meta-learning or learning how to learn (Biggs, 1985). The overarching aim of this research is to improve the literacy and numeracy levels of students re-sitting maths and or English GCSE.

A group of 15 maths and English re-sit students participated in the full research project. A minimum of 13 of these students anonymously declared at least one of the following personal circumstances at the beginning of the study: learning difficulties; mental health difficulties; alcohol or drug use; young carer; young parent or looked after child. Final survey results indicate that taking part in the meta-learning programme had some positive impact on these learners, including increased independent study, utilising a wider variety of active study and revision techniques to prepare for mock exams and increased attendance at support sessions. Positive changes to some students' attitudes were also observed in maths and English classes.

Although this research was conducted on a small scale, a positive effect was observed which highlights the potential benefits of approaching the GCSE re-sit curriculum holistically, with a greater focus on areas such as study skills, motivation and meta-learning, especially for learners who may be considered disadvantaged. There may be benefits of this within vocational curricula, or for school-aged learners across all GCSE subjects. All of which warrants further research and investigation, particularly to determine whether this approach impacts positively upon students' attitudes and behaviours in the longer term.

Literature Review

Blackwell, Trzesniewski & Dweck (2007) conducted two longitudinal studies into the effects of individuals' perceptions of intelligence on their achievement in secondary mathematics. In one study, they carried out an intervention to teach students that intelligence is not fixed and that every individual is capable of improving their intelligence through effort. This is referred to as incremental intelligence theory. In comparison with a control group, this had a positive impact on the students' grades in mathematics over a period of two years. There are many other instances of studies which have reported similar outcomes. Examples include Henderson & Dweck's (1990) study of first-year junior high school students and Good, Aronson & Inzlicht's (2003) study of adolescent students.

Blackwell, Trzesniewski & Dweck's (2007) work focused on secondary school-aged students in New York. The group of students who participated in the intervention study were described as 'relatively low-achieving' in mathematics, and almost 80% were eligible for their equivalent of free school meals. This resonates similarities with the cohorts of maths and English re-sit students we encounter working at an FE college based in a community with high levels of deprivation. They argue that the significant changes facing adolescents in their transition to junior high school can trigger a decline in grades. Furthermore, they recognise that many students are unable to un-do this decline throughout their time in education. Reversing this decline has been a primary purpose of introducing compulsory GCSE English and Maths re-sits in England. As teachers at the centre of this policy, each year we see students present at college enrolment with pre-GCSE level English and maths. Embarking on a vocational college

course is a significant transition period for these learners, and it is our role to support these learners to work towards achieving high-grade GCSE passes during this time.

Dweck (2000) argues that it is students' core beliefs that determine their approach to educational challenges that they encounter. We often find that students are unmotivated to undertake GCSE re-sits when they enrol at college. Many students demonstrate their capabilities in class but do not appear to achieve their potential in their final exams. Dweck's argument could offer explanation for this. However, if so, resolving this would require altering students' inner beliefs. This seems a monumental task, and we do not underestimate the challenge but we hope to find strategies from this research which can at least begin to make small changes towards triggering more positive responses to English and maths in FE.

Blackwell, Trzesniewski & Dweck (2007) chose to measure mathematics achievement for a variety of reasons including its academic challenge, objectivity of assessment and its dependence on a linear style curriculum which builds on previous knowledge. They acknowledge that this style of curriculum results in more severe gaps in achievement over time. Our research is focussed in our respective fields of maths and English GCSE re-sits and this reasoning highlights why re-sits can be so challenging. Gaps in underpinning knowledge, in both disciplines, limit students' progress over time which widens these gaps and exasperates the problem.

Education theorist Basil Bernstein describes three 'pedagogical rights': Enhancement, Participation and Inclusion (Vitale and Exley, 2015). He reveals a necessity for social justice and proposes that formal education should institutionalise these three pedagogical rights. For many of the students we teach they do not have the right to enhancement, in the sense of they have been deprived of access to critical thinking and looking into new possibilities. Students appear to have adopted a culture of blame. Firstly, due to them having to re-sit the GCSE English and maths examinations and secondly for their socio-economic situation. The result of these issues can present as aggression towards the teacher and the system. The lack of personal responsibility is often not spoken, because of the reality of their situation is upsetting and concerning. Moreover, many students attend college with a fixed mind-set, brought about by upbringing and socioeconomic background. In terms of pedagogic rights students' value expressing their opinion, belonging to a group and the prospect of using perceived knowledge for future goals or employment.

Paolo Freire developed an approach to teaching illiterate learners in South America in the mid-20th Century (1970). While his work is decades old and based on teaching in a distinctly austere setting, there are themes in his approach that have relevance to modern-day teaching in Britain. For example, he stresses that effective teaching pedagogies must be created through dialogue with the learners, with contributions from both the teacher and learner in contrast to a teacher dictating how the learner should learn. Similarly, to incremental intelligence theory, his pedagogy centres on the belief that students' abilities are inherent.

Coffield (2000) highlights evidence of a reduction in participation of formal learning activities, such as traditional classroom-based delivery, for adult learners in comparison with school-aged students. He describes how informal learning methods can be a more effective and efficient approach for students to achieve their personal learning goals. More specifically, Coffield is referring to goals set by the students for their learning which corroborates with Freire's approach of the teacher and student working together. Both researchers imply that more effective learning can take place when a student takes ownership of their learning.

Our motivation for undertaking this research is to find strategies to improve students' literacy and numeracy skills and consequently improve success in English and maths. Improved outcomes evidence's improvements in students' abilities. However, Coffield criticises the narrow focus on achievement of qualifications throughout the education system and champions the need for a more holistic educational approach. Developing a broader spectrum of skills throughout their time in education is invaluable to students for their future employment and everyday life. Coffield also highlights the positive impact of developing such skills on the nation's economy. He describes how employers need a workforce who know how to learn for themselves.

Coffield's economic argument links back to our initial questions into the correlation between low levels of literacy and numeracy and social factors such as poverty and drug and alcohol abuse. Many other educational researchers have shared views on this matter. William (2018) identifies the significant impact of poverty on learning. However, he also recognises the impact of classroom practice and explains how effective teaching has the potential to reduce the attainment gap between students of different socio-economic backgrounds. In contrast, Davison (2010) argues that academic success is often driven by students' home lives and that teachers can only have a limited impact on changing this. From our personal experiences in

FE, we face many challenges but do see successes with individual learners. The successes we witness motivate us to continue our work and solidify it with research to determine the most effective approaches.

The literature discussed in this review, including Blackwell, Trzesniewski & Dweck's (2007) research into student perceptions of their own abilities alongside attainment, Coffield's criticisms of our education systems focus on certification and Freire's fostering of students' inherent abilities through dialogic pedagogy, has helped to guide our research aims from a focus on outcomes towards a more balanced approach. We still hope to see improvements in outcomes; however, our starting point will be with our students' perceptions of their own abilities, potential and motivations.

Blackwell, Trzesniewski & Dweck's (2007) study included a focus on classroom behaviour and student motivation. We would like to take this further and investigate whether delivering meta-learning sessions as an intervention to our students in FE can increase their motivation and work efforts outside of the classroom. As discussed previously, Coffield (2000) acknowledges increased participation in informal learning with adult learners. This could explain why we see significantly higher results for adults studying GCSE English and maths in FE. These learners appear much more motivated and generally demonstrate a stronger work ethic in and out of lessons. While we recognise that adult learners have chosen to undertake these GCSE courses, we hope that if we can encourage elements of this behaviour in study programme learners undertaking compulsory re-sits, then there is potential to enhance their learning and improve outcomes.

Research Methodology

A group of 20 students were taken from their usual study class of either maths or English and took part in five, thirty-minute meta-learning sessions over a five week period. We combined our usual maths and English groups together in order to deliver the sessions as a research team. Due to student attendance only 15 of the students participated in the full project from start to finish. The students involved were from a mix of level 2 and 3 vocational courses and were enrolled to re-sit GCSE Maths and/or English. Some students had enrolled at the college for the first time in September 2019 and others were returning students from the previous

academic year. A few of the students were enrolled for GCSE English and Functional Skills maths.

The sessions were based on a study by Blackwell, Trzesniewski & Dweck (2007) and each session had a clear objective (see appendix A for a detailed description of each session plan). Students completed an initial survey at the very beginning of the first session and then another survey at the end of the final session, both surveys were anonymous (see appendix B). Additional data was collected through keeping records of discussions with students and also any observations noted by tutors during the meta-learning sessions, in maths and English lessons or outside of class.

Throughout our delivery of the sessions we explained that as teachers we were learning alongside the students and that Meta-learning was a relatively new concept for us too. According to Freire (1970, p.48) this was said to be important because "pedagogy must be formed 'with' not 'for' the oppressed". Considering this approach, we regularly discussed the students' views within the sessions and adapted our plans for the following session accordingly.

Ethical Statement

Following the British Educational Research Association (BERA) 2018 guidelines, this research project has been conducted in a manner which ensures the respect and dignity for student participants is protected. Participants were chosen based solely on college timetables and not on individual merit. At the beginning of the research project, consent was sought from each student involved. Participants were informed that a series of sessions would take place at the start of their scheduled maths or English lesson, with participation in the sessions being voluntary. An explanation was provided as to why the research was being conducted and of its overall aim. Confidentiality was maintained throughout the project and student anonymity was protected. Surveys conducted at the beginning and the end of the research project were carried out anonymously. Each survey had a set of questions which required a simple cross or

tick, they were folded into small squares and placed into a box. This has ensured that the researchers themselves have no idea whom each survey belonged to. All students involved were happy to be part of the research and were satisfied in the manner of which it was conducted.

Data Analysis

Throughout the five-week period in which we delivered the meta-learning sessions we recorded observational notes on the student participants' attitudes and behaviours. During the sessions, the responses from students were mixed. Some were more vocal than others and more willing to answer questions and offer their views. Some engaged with the sessions more easily than others and displayed more enthusiasm and positivity in their responses. Others were more reserved, perhaps sceptical, which we felt was to be expected considering we were taking students out of their comfort zones. Following Freire's (1970) pedagogy, throughout our delivery we consistently reiterated that we were learning with the students, us learning from them, them learning from each other, as well as them learning from us. This appeared to be positively received by the students and as tutors we felt that this was key to creating a positive atmosphere in which students could more freely express their views.

Worryingly we observed that students became more excited and enthusiastic to discuss negative issues described in the press rather than how they can improve their grades. However, what did become apparent was the value in dialogue. The students were keen to express their views openly and have their views listened to. A notable culture of blame was apparent and lack of personal responsibility for their study. Limited time with the students restricted our ability to indulge in more conversations around who was to blame for their underachieving.

Outside of the main sessions we recorded many positive changes in the students' attitudes and behaviours, noticeably more than we expected. For example, some students began to attend additional support sessions including twilight sessions and revision classes during the February half-term break. Students submitted more independent work than they had previously, this included a couple of students submitting multiple revision work booklets at once which is unusual and indicated that they had spent a significant amount of time studying

outside of class. This led to improved assessment results compared with previous assessments throughout the year. One student requested additional twilight sessions in the run-up to the exams and discussed finding a private tutor to support their revision at home. We noticed improved attitudes from a number of the learners but we saw one student in particular significantly re-focus, improve their work ethic, and as a result saw a marked improvement in a mock exam they completed in comparison to previous assessments. Although our initial motivation for undertaking the project was to improve attainment, in line with Coffield (2000), as we moved through the project, less measurable factors such as the students' self-belief and willingness to work hard became of equal, if not greater, importance.

As expected, there were some negative responses too, comments such as "why do we have to do those sessions" and "can't we just do maths instead". However, most pleasingly, the negative attitudes displayed did not appear to un-do the positive impact of the sessions on the other students. We felt this may be explained by the mixture of individual and group tasks within the sessions as well as independent reading tasks set to complete in between sessions. We wanted the students to leave the sessions considering the ideas discussed and what it means for them as individuals, hence that individual thinking time to process the concepts for themselves, appeared to be equally as important as the group tasks to share and develop ideas.

A further positive finding from the survey completed by the students at the end of the final session, indicated that a number of the students had reconsidered and altered their approaches to revision for the mock exams (see appendix C). More specifically, the data collected shows a shift towards more active revision methods such as researching new topics and completing questions as oppose to more passive methods such as re-reading notes or watching a video. These approaches support more meaningful and effective learning (Mayer, 2002).

It was particularly positive that all of the students reported that they were planning to do something to prepare for their mock exams. We recognise that this isn't the same as actually completing the revision work, but the intention is a least the start of the process. One student who had previously selected 'You don't revise for exams' on their final survey then selected practice questions, exam papers and reviewing new and previously learnt topics as

preparation for their mock exams. It is also worth noting that the end survey indicates a drop in 'attend revision classes' as preparation for mock exams, but this could be because we had not planned any specific mock exam revision classes for the week that the students completed the survey.

The survey data also indicated an increase in the different method students were using for revision and independent study between the start and end of the meta-learning programme. There are positive changes in the choice of revision methods utilised by students between the start and the end of the meta-learning programme (see appendix C). Again, there is a noticeable shift from passive to active revision methods. Due to the different number of students taking each survey some of the results were not significant enough to determine whether there had been a change in the responses. However, there were some clear positive changes. In the final survey, out of the 15 students who completed both surveys we know that at the very least: 2 more selected reading class notes, 2 more watched revision videos, 1 more attended revision classes, 3 more completed practice exam papers and 2 more researched new topics.

We also found a positive change in the amount of time students were spending on maths and English outside of lessons (see appendix C). At least 1 of the students who took the survey initially moved their practice up to regularly or daily (it is possible that the higher responses could have been from two students who did not take the initial survey). This is the minimum or worst-case scenario so it is quite conceivable that more of the students increased their practice. However, it should also be noted that the increase in revision practice could also be due the upcoming mock exams and the closer proximity to the main exams. Although the rest of the data does indicate that the sessions were having some positive impact so it may well be a result of both factors.

These small positive changes correspond with the findings of Blackwell, Trzesniewski & Dweck (2007) who reported that teaching incremental intelligence theory to students had a positive impact on their attainment in mathematics. Whilst the findings of our small-scale study cannot confirm that teaching concepts of the brain and open mind-set improve grades, we have been observing evidence of critical thinking when discussions are taking place in the classroom linking to what Bernstein describes as a pedagogical right (Vitale and Exley, 2015).

The students we work with in the North East of England are underprivileged but are not futureless or unsalvageable. We have learnt that teaching subject content alone will not generate the improved results we are aiming for; however we have found huge benefits in dialogue, patience, and tolerance on listening to students.

Key Findings

Throughout the project positive changes to some students' attitudes and behaviours were observed. For example, handing in additional work booklets completed outside of class, attending additional intervention sessions and improved work ethic in class. We observed an increase in discussions relating to independent study and revision of maths and English between staff and students. More specifically, the notably more positive tone of these discussions was recognised. Comments included:

"I might actually do some maths over half-term"

"I did a whole hour of maths last night"

"I added a load of sophisticated vocabulary to my creative writing"

The final survey results indicate clear changes in the students' approaches to their revision. More students considered active study methods such as, making flashcards and researching topics that are new to them or that they do not understand. Comparisons between initial and final surveys also indicate that the students increased the variety of techniques they were using for their independent study.

Recommendations

Considering our findings, we recommend the following:

- Maths and English tutors delivering GCSE re-sit programmes should specifically plan

to embed meta-learning within the curriculum, including reference to the function of the brain and neuroplasticity.

- Emphasis on learning through mistakes should be embedded throughout maths and English GCSE re-sit lessons.

- Specific time should be allocated for the delivery of study skills and revision techniques within the delivery of GCSE maths and English re-sit programmes. This should include reference to active learning methods.

- CPD programmes should be developed and delivered to support the prior recommendations.

- High quality resources for teaching staff on meta-learning, neuroplasticity, revision techniques and active learning should be developed and shared to support the previous recommendations.

- Managers should be supportive of maths and English GCSE re-sit tutors using lesson time to explore the aforementioned concepts without formal judgement/observation.

One recommendation that we have currently omitted from this list is to timetable specific sessions for the delivery of meta-learning and revision techniques for GCSE Maths and English. We are writing up this research in summer 2020, an unprecedented and uncertain time due to the global coronavirus crisis (WHO, 2020). Particularly in the context of education as we do not know what our classrooms will look like in the next academic year. We do not know whether our teaching will be virtual or face-to-face and we do not know how significantly the shortened academic year of 19/20 will impact our learners; their initial levels of literacy and numeracy in September; and most importantly, their self-efficacy. For the first time in our careers we will be faced with a cohort of GCSE re-sit students who, in their minds, are not sat in front of us because they messed up an exam, missed an exam, didn't revise hard enough or didn't revise at all. This time they are sat there because of a grade effectively awarded by their teacher/school (FE Week, 2020). Some of these grades will be from teachers who have potentially known and worked with these learners for 3-5 years at school, some will be from us, their teachers from their previous year at college. Moreover, the emotional impact of

these circumstances may well be secondary to the impact of the Covid-19 crisis, the impact on their loved ones, the long periods of isolation or the loss of normality. Our initial findings, as expected, indicate that a high proportion of our current re-sit learners experience difficult personal circumstances. In 20/21, this could be true of almost all, if not all of our learners.

There are many limitations of our study. It was conducted on a very small scale and requires much greater and more sophisticated statistical analysis as well as more in-depth interviews and case studies to determine whether the findings are significant and claim any reliable generalisability. However, in our roles as researchers and practitioners we observed positive changes. We felt that that taking time out of lessons with a different approach rather than teaching content made the time spent delivering maths and English content more effective. We have not been able to see whether this would have impacted GCSE re-sit results due to the cancellation of the summer 2020 exams but in our personal teaching practice, we plan to continue our new approach in September. We expect that the 20/21 academic year will be a mix of online and classroom delivery, so our face-to-face classroom time will be even more precious. Whilst it may seem counter-intuitive to take more time out of this for the delivery of meta-learning sessions, it is even more crucial that our time in the classroom is as effective as possible. It is even more crucial again that our learners can and do, study effectively in their own time. Finally, we must be prepared to tackle what may be our biggest challenge yet in terms of motivating, engaging and inspiring self-belief in our GCSE re-sit cohort.

A further limitation is that we cannot say whether the positive changes we found will be long-lasting. It would be interesting to see this type of intervention carried out over a longer time period, as it was in Blackwell, Trzesniewski & Dweck's (2007) study, and also to conduct interviews with participants in the academic year following the completion of the study to assess whether there has been a lasting positive impact. Regardless of whether or not evidence of impact is seen in future exam results, even a subtle positive change in students' mindset would make the intervention worthwhile.

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Appendices

Appendix A: Session Plans

Session 1 – The brain, meta-learning and active learning

The first session focused on a series of facts and the function of the brain. We discussed with students the reasons why we had decided to deliver these sessions. We discussed different approaches to studying and how active approaches can lead to more meaningful learning and improve retention and understanding. During the session we also discussed how and why students view education in a negative way. We discussed challenges faced by young people in the area.

Session 2 - Neuroplasticity

In the second session students were given an article to read as a handout 'you can grow your intelligence' taken from: Mindsetworks.com. 2020. [online] Available at: <https://www.mindsetworks.com/websitemedia/youcangrowyourintelligence.pdf> [Accessed 12 June 2020]. We then discussed the functions of the brain's neurons and pathways, providing analogies to aide understanding. For example, we asked students to imagine learning to walking through tall grass across an untrodden field. The first time it was done it would be difficult, however a path had been created, and each time it was walked on the journey would become easier. We then related this to pathways in the brain and emphasised how it linked to their learning the more they practiced the easier it would be to recall that information the next time.

Session 3 - Mindset, mistakes and the power of repetition

In the third session we looked at learning through struggle and challenge and examples of well-known people who have overcome challenges to achieve success. We discussed the value of mistakes in learning and how review and repetition are key for meaningful learning and deepening understanding.

Session 4 – The learning pit and the role of feedback

In session 4 we introduced students to the learning pit to extend and reiterate the ideas from the previous session about learning through challenge. We played the YouTube clip 'critique and feedback- the story of Austin's butterfly – Ron Berger' (YouTube.com. 2012. [online] Available at: < https://www.youtube.com/watch?v=hqh1MRWZjms> [Accessed 12 June 2020].) to demonstrate the importance of feedback and how this aides learning. We also looked at examples of revision walls and the students created a detailed revision planner.

Session 5 – Review and revision techniques

We used the final session to review and discuss the content covered in sessions 1-4. We also discussed revision techniques such as 'chunking' to break down revision material and showed a YouTube clip called 'The Chunking Trick' (YouTube.com. 2015. [online] Available at: <https://www.youtube.com/watch?v=KhZrQQeZ0WA> [Accessed 12 June 2020].) The final session concluded with the final survey.

Appendix B: Surveys

Initial Survey

School maths grade ………..
School English grade ……....

How strongly do you agree with the following statements? Circle your responses.

1. No matter how much intelligence you have, you can always improve it.

Disagree A Lot   Disagree   Disagree A Little   Agree A Little   Agree   Agree A Lot

2. You can learn new things, but you cannot really change your basic level of intelligence.

Disagree A Lot   Disagree   Disagree A Little   Agree A Little   Agree   Agree A Lot

3. I like my work best when it makes me think hard.

Disagree A Lot   Disagree   Disagree A Little   Agree A Little   Agree   Agree A Lot

4. I like my work best when I can do it really well without too much trouble.

Disagree A Lot   Disagree   Disagree A Little   Agree A Little   Agree   Agree A Lot

5. I like work that I'll learn from even if I make a lot of mistakes.

Disagree A Lot   Disagree   Disagree A Little   Agree A Little   Agree   Agree A Lot

6. I like my work best when I can do it perfectly without any mistakes.

Disagree A Lot   Disagree   Disagree A Little   Agree A Little   Agree   Agree A Lot

7. When something is hard, it just makes me want to work more on it, not less.

Disagree A Lot   Disagree   Disagree A Little   Agree A Little   Agree   Agree A Lot

8. To tell the truth, when I work hard, it makes me feel as though I'm not very smart.

Disagree A Lot   Disagree   Disagree A Little   Agree A Little   Agree   Agree A Lot

(Mindset questions are from: Blog.mindsetworks.com. 2020. *What's My Mindset?*. [online] Available at: <https://blog.mindsetworks.com/what-s-my-mindset> [Accessed 12 June 2020].)

How do you revise for maths and/or English exams? Tick all that apply:
- Re-reading class notes

- Watching revision videos
- Use a revision guide
- Make flashcards
- Attend revision classes
- Practice questions
- Completing practice exam papers
- Discussing feedback from exam papers with your peers/teacher
- Reviewing topics that you have learnt previously
- Researching topics that you have not seen before or do not understand
- Other
- You don't revise for exams

How often do you practise maths and/or English outside of lessons:

- Never
- Very Rarely (e.g. an hour per month)
- Rarely (e.g. an hour per fortnight)
- Occasionally (e.g. at least one hour per week)
- Regularly (e.g. at least three hours per week)
- Daily

Tick any of the following that apply to you and/or a member of your household:

- Learning difficulties (including dyslexia/dyscalculia)
- Mental health difficulties (including anxiety/depression)
- Use of a food bank
- Alcohol or drug use
- Young carer
- Young parent
- Experience of domestic violence
- Looked after child

Final Survey

By completing the following survey you are consenting to taking part in the research project as discussed in class. Please take a note of the number in the top right-hand corner. This is your anonymous unique identifier. If you wish to withdraw your data from the study after you have completed the survey then your identifier can be used to do so. Please aim to contact the researchers (Sarah or Mel) within 8 weeks of completing the survey in case the data has already been published.

How strongly do you agree with the following statements? Circle your responses.

1. No matter how much intelligence you have, you can always improve it.

Disagree A Lot   Disagree   Disagree A Little   Agree A Little   Agree   Agree A Lot

2. You can learn new things, but you cannot really change your basic level of intelligence.

Disagree A Lot   Disagree   Disagree A Little   Agree A Little   Agree   Agree A Lot

3. I like my work best when it makes me think hard.

Disagree A Lot   Disagree   Disagree A Little   Agree A Little   Agree   Agree A Lot

4. I like my work best when I can do it really well without too much trouble.

Disagree A Lot   Disagree   Disagree A Little   Agree A Little   Agree   Agree A Lot

5. I like work that I'll learn from even if I make a lot of mistakes.

Disagree A Lot   Disagree   Disagree A Little   Agree A Little   Agree   Agree A Lot

6. I like my work best when I can do it perfectly without any mistakes.

Disagree A Lot   Disagree   Disagree A Little   Agree A Little   Agree   Agree A Lot

7. When something is hard, it just makes me want to work more on it, not less.

Disagree A Lot   Disagree   Disagree A Little   Agree A Little   Agree   Agree A Lot

8. To tell the truth, when I work hard, it makes me feel as though I'm not very smart.

Disagree A Lot   Disagree   Disagree A Little   Agree A Little   Agree   Agree A Lot

(Mindset questions are from: Blog.mindsetworks.com. 2020. *What's My Mindset?*. [online]

Available at: <https://blog.mindsetworks.com/what-s-my-mindset> [Accessed 12 June 2020].)
How do you revise for maths and/or English exams? Tick all that apply:
- o   Re-reading class notes

- o Watching revision videos
- o Use a revision guide
- o Make flashcards
- o Attend revision classes
- o Practice questions
- o Completing practice exam papers
- o Discussing feedback from exam papers with your peers/teacher
- o Reviewing topics that you have learnt previously
- o Researching topics that you have not seen before or do not understand
- o Other
- o You don't revise for exams

**How are you planning to revise over the next week to prepare for your mock exams? Tick all that apply:**

- o Re-reading class notes
- o Watching revision videos
- o Use a revision guide
- o Make flashcards
- o Attend revision classes
- o Practice questions
- o Completing practice exam papers
- o Discussing feedback from exam papers with your peers/teacher
- o Reviewing topics that you have learnt previously
- o Researching topics that you have not seen before or do not understand
- o Other
- o You don't revise for exams

How often have you practised maths and/or English outside of lessons in the past 6 weeks?
- o Never
- o Very Rarely (e.g. one or two hours in six weeks)
- o Rarely (e.g. an hour per fortnight)
- o Occasionally (e.g. at least one hour per week)
- o Regularly (e.g. at least three hours per week)
- o Daily

Appendix C: Key findings from survey results

How do you revise for maths and/or English exams? Tick all that apply:	Usual Revision Methods	Mock exam revision methods (change)
Re-reading class notes	14	9 (-5)
Watching revision videos	11	10 (-1)
Use a revision guide	7	7
Make flashcards	3	7 (+4)
Attend revision classes	8	3 (-5)
Practice questions	10	13 (+3)
Completing practice exam papers	10	11 (+1)
Discussing feedback from exam papers with your peers/teacher	5	7 (+2)
Reviewing topics that you have learnt previously	7	8 (+1)
Researching topics that you have not seen before or do not understand	6	9 (+3)
Other	3	1 (-2)
You don't revise for exams	1	0

Chart 1: Mock Exam Revision Methods
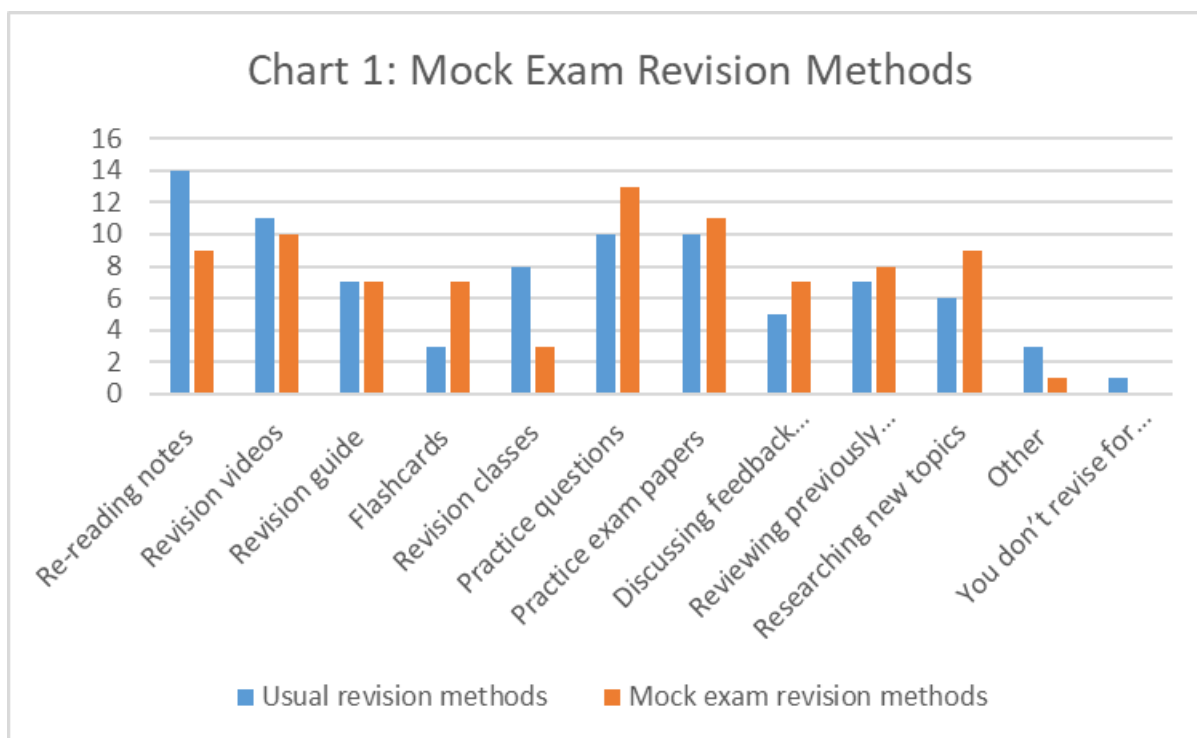
In the table below the results in brackets account for the fact that two students took the final survey who did not take the initial survey.

How do you revise for maths and/or English exams? Tick all that apply:	Initial Survey	Final Survey (min initial)	Change (min change)
Re-reading class notes	10	14 (12)	+4 (+2)
Watching revision videos	7	11 (9)	+4 (+2)
Use a revision guide	7	7	0
Make flashcards	3	3	0
Attend revision classes	5	8 (6)	+3 (+1)
Practice questions	8	10 (8)	+2 (0)
Completing practice exam papers	5	10 (8)	+5 (+3)

Discussing feedback from exam papers with your peers/teacher	4	5 (3)	+1 (-1)
Reviewing topics that you have learnt previously	5	7 (5)	+2 (0)
Researching topics that you have not seen before or do not understand	2	6 (4)	+4 (+2)
Other	1	3 (1)	+2 (0)
You don't revise for exams	2	1	-1

Chart 2: Revision Methods
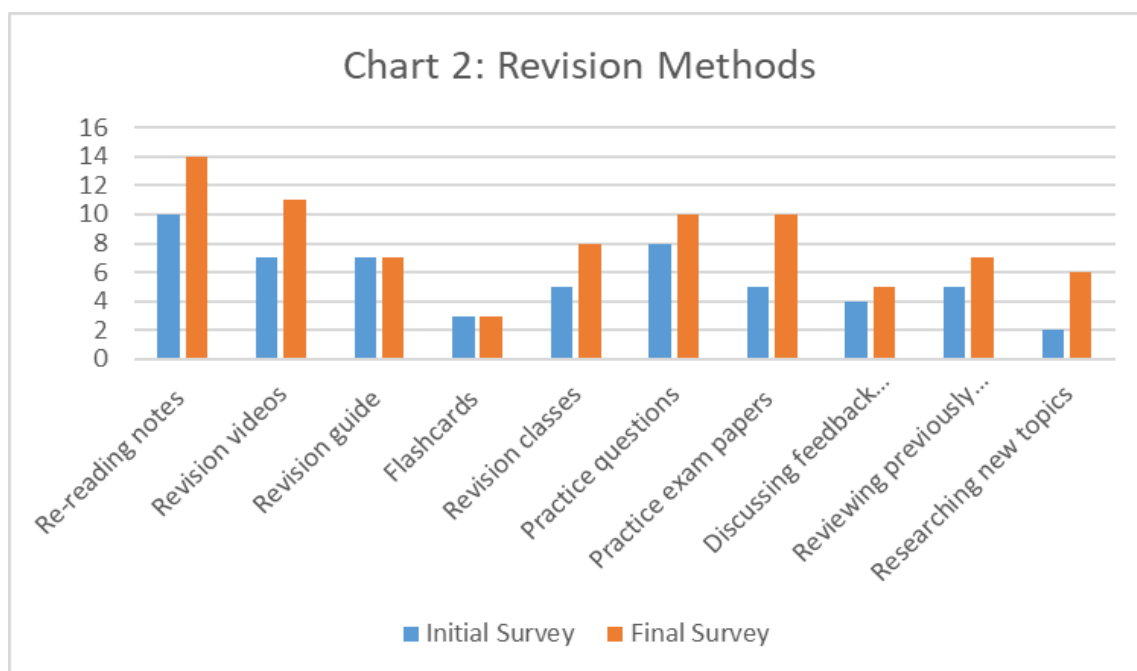
How often do you practise maths and/or English outside of lessons:	Initial Survey	Final Survey
Never	3	1
Very Rarely (e.g. an hour per month)	4	4
Rarely (e.g. an hour per fortnight)	5	4
Occasionally (e.g. at least one hour per week)	6	3
Regularly (e.g. at least three hours per week)	2	3
Daily	0	2