TEAC 1162/1163

ACADEMIC ASSIGNMENT AND REFLECTIVE WRITING 3 EXEMPLAR EXCERPTS AND COMMON ERRORS WITH FEEDBACK

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LITERATURE REVIEW ASSIGNMENT 1 – exemplar excerpt

How can we improve students deeper understanding of ratio and proportion in mathematics?

After the recent changes to the GCSE grading system in the UK, the GCSE mathematics syllabus underwent a subtle yet significant change. Whilst a majority of the context was kept the same, there has been substantial emphasis on the ability of students to "apply their mathematical understanding to real world concepts." (DfE 2014). This is to be done through "greater coverage in topics such as ratio, proportion and rates of change" (www.gov.uk 2015)

A comparison of the old A*-G grade exams compared to the new 9-1 grade exams reveal that questions involving ratio and rates of change have become more challenging. Questions are now being entrenched in different contexts, involve manipulating more than one ratio or rate of change and are being submersed with other topics in an attempt to test students deeper understanding of the topic and clearly differentiate high ability students. In response to this, many websites offering GCSE resources had to ramp-up the difficulty of their practice questions to match the new standards of the exams. Practice questions designed to stretch the most able now involve ratios of 4 variables and require more than just splitting an integer amount by a given ratio (www.mathsgenie.co.uk). These questions are designed to draw on the student's tool-kit of strategies and mathematical understanding to solve in a coherent and logical way.

Given the new focus on this topic it is then worth exploring the difficulties students face in understanding ratio and ways in which educators can better develop students understanding of the fundamental concepts behind proportional reasoning. Drawing from wider literature, we will look at three common themes; differentiating between additive and multiplicative problems, different methods used in proportional reasoning and the impact of teacher mathematical knowledge.

Additive and Multiplicative Problems

One recurring obstacle that students face during their mathematical progression is the shift of dealing with problems involving adding and subtracting, to problems that involve scale and proportional reasoning. Artut (2015) draws on a range of studies investigating how students frequently misuse additive strategies in problems that involve proportional reasoning, citing this as the most frequent error made in ratio questions for students in middle grades at school. Fernandez (2012) also highlights this problem of an overuse of additive strategies in primary students, and an overuse of multiplicative strategies in additive problems, suggesting that the problem may not simply be the transition between the two strategies, rather that students become over reliant on the procedural steps of each method and apply them without thinking about the relevance. This could cause problems where proficiency at executing proportional methods may be present as a student gets older is mistaken for a deeper understanding of the topic. Given the importance of transitioning from

additive to multiplicative reasoning to a students' continued development for mathematics, an argument could be posed that more needs to be done at primary…

Feedback from Literature Review

This essay demonstrates a very good potential to pass at level 7.

You have demonstrated a good understanding of the issues about the teaching and learning of your chosen topic with appropriate justification throughout. Be careful to ensure that you justify all your comments and beliefs that you make throughout. See embedded comments for further information.

You have posed interesting and appropriate questions for further analysis in your work.

You essay is very well- structured with a clear focus and rationale.

Well done.

"Second Marker

This is well structured and has drawn on a variety of texts to back up your thoughts. You must take care to justify all your comments. You obviously have significant knowledge of issues that arise in the classroom in relation to this topic and have begun to pose some possible solutions. I look forward to reading the finished assignment.

Assignment 1 – exemplar excerpt

Traditional Teaching

Unfortunately for many students, there is an insistence on teaching this topic in a traditional manner (Akyeampong et al. cited in Mensah-Wonkyi & Adu 2016). This is described by N.S. Kennedy (2012) as

> "traditional school experiences, in which students are often lectured, given math procedures to follow without being asked to actively participate in making sense of the mathematical activity, or to search for connections with their previous mathematical knowledge." (p 431)

My personal experience with this topic agrees with these sources. Circle theorems were almost alone in being taught in such a way at my secondary school, being covered as a series of unrelated facts in a single lesson and never again referred to until external assessment reared its head, upon which time the same facts were briefly repeated. This kind of practice coincides with some subpar performance by students in several areas. Edexcel Examiners' Reports from the higher tier GCSEs

(2016-2017) show that many students have successfully memorised the theorems as required, but often mistake problems as having the same solutions as a visually similar problem, such as mistaking the alternate segment and alternate angle theorems and failing to recognise a cyclic quadrilateral. The reports also illuminate a lack of student ability to communicate the reasons for an answer, even in cases where the answers given were correct. This is supported by Akyuz (2016), who finds that the lack of variation in the way circle theorems are taught leads to several misconceptions about the conditions in which said theorems apply. In particular, he notes that the principal circle theorem, that angles from a chord at the centre are twice that at the circumference, are almost always drawn the same way. This leads to students not recognising the below diagrams as being examples of the same theorem.

Overall feedback

You have demonstrated engagement with and application of key concepts around a topic that is clearly difficult to find a range of specific research to inform your teaching practice. I am impressed by the way you have demonstrated a thorough understanding of the relationship between theory and practice.

You have been innovative and rigorous in your highly critical analysis of the literature that you have used to support your findings. It is pleasing to see that you did not give up on the topic of choice due to the lack of literature you could find to inform your work.

Assignment 1 – exemplar excerpt

… that teachers usually teach how they were taught, we should attempt to break this tradition and push our pedagogy to improve. I do agree that innovation should start with iterations like this as it is understanding which will combat misconceptions and/or disinterest demonstrated by pupils in the classroom and in tests.
Another study by M Usman (2017) researches different techniques in teaching and their impact on pupils attitude to trigonometry. Usman found that the language of trigonometry can be misunderstood or confuse students and it is the teachers role to simplify this. It is recommended for example that the “Teacher should make trigonometry lessons exciting by encouraging group work with frequent activity based demonstrations so as to demystify the difficulty encountered in problems involving trigonometry.” By changing the attitude towards trigonometry as a difficult subject to a much simpler one would have a positive impact in my own opinion and this is supported by Usman.
Looking at the research here overall I believe that Bressoud and Usman have interesting ideas in their studies which can be implemented, to enthuse pupils to learn this topic will reduce errors and improve learning. Although Bressoud has a more hypothetical statement Usman has more definitive evidence which I will take into account with my own practice.

Overall feedback

You have demonstrated that you have very good understanding of the issues about teaching your chosen topic and used appropriate referencing throughout to justify your work.

You have been critical in your analysis of the literature you have read, and you have justified your reasoning throughout and considered the limitations of this.

Assignment 2 – exemplar excerpt

… for a variety of purposes within a teaching session but is primarily used as a way to enhance learning (Vlachou, 2018). There are two main assessment categories where the different types of assessment techniques usually fall into. These are summative assessment and formative assessment. Summative assessment are used to summarise learning that has taken place over time. It usually occurs at the end of a unit or learning period within the school and has a tendency to be formal with questions based on what has been learnt for that period of time (Vlachou, 2018). The results for summative assessments are typically expressed as a numerical value or as an alphabetical symbol to denote a grade which highlights where a student's current ability lies and where any gaps in the students understanding are (Isaacs et al., 2013). Having a grade allows the teacher to systematically place students on a scale and can assist the planning of lessons by a variety of ways. For example, the grades at the end of unit tests can assist with the placing of students within a classroom. I have seen this done by a teacher in my year 8 class who changes the seating plan every half term. Weaker students are placed nearer the front and higher ability students near the back. The reasoning behind this is students nearer the front can access the class teacher more readily and the students are grouped with similar ability students so that work can be differentiated more appropriately.

The student whose assessment will be analysed is a non-SEN student from year 9 who has been recently paired with a student who has moved down from set 2 (middle ability) to set 3 (lower ability). The reason for choosing this student is that although the student is in the bottom set, the student is performing better and is more attentive in lessons since moving next to a student who he works well with. This dynamic relationship is something I am keen to exploit as both students show increased passion towards mathematics and a sense of competition has since brewed between them. For the purpose of this assignment I would be calling this student as student x.

Overall Feedback

You have demonstrated a good understanding of the task through engagement with and application of key concepts.
Your essay shows thorough understanding of assessment practices used in schools and the relationship between theory and practice. I would have liked to have seen

you support your own practice observations in a similar vein that you did at the beginning of your essay. This would clearly link your own practices to that of theory more clearly.

You have demonstrated that through your rigorous analysis of key approaches and theories you have been able to identify what your student is struggling with and how you could support them in moving forwards. Furthermore, you have also informed the reader of what you noticed early on and how you supported the student's progress by changing the seating plan although this was not linked with theory, which would have been good.

Assignment 2 – exemplar excerpt

Children with current self-esteem issues are often more likely to have test anxiety (von der Embse,2018). Students who lack self-confidence for various reasons will often then struggle to acknowledge whatever their true academic abilities and skills are which can then lead to anxiety about any summative assessments (Spielberger et al., 2015). For JM, this seemed to focus more on the end of year exams which can be shown with her notably lower grades on these assessments. This may be because, within this school, there is a lot more time spent on revision on these exams compared to the end of module tests which there's less pressure for. The fact that the results of the end of year tests can affect which set the students will be in for the following year may add to this pressure.

Overall Feedback

You have demonstrated a clear understanding of the role of both summative and formative assessment process and their value in the learning process. It would have been improved if you had been more specific in how the strategies suggested for formative assessment had been used.
You have clearly described why you chose your student and have good knowledge of her abilities and possible issues. You have focused on Test anxiety and have related what you have found out to offer ways in which your chosen student may be helped to do better under exam conditions. You briefly touch on questioning and make some useful comments.

REFLECTIVE WRITING 3 - exemplar excerpts

‘Student A is a very high performing BME and EAL student, noted in previous lessons to have good answers to questions when asked but a reluctance to volunteer answers on their own.

Student B is a BME and SEN student. They have a statement made for an eye condition, which causes them to have extreme difficulty reading anything far away, regardless of size.

Student C is a SEN pupil suffering from Arthritis. Though they do not have a statement they seem to have vision difficulties similar to student B.

Student D is a student whose work is neither particularly impressive nor notably poor with no extenuating circumstances, but who has received very poor results in recent assessments, causing a call from their parents expressing concern. While their written work is squarely in the middle of the class, they are noted to be almost silent during group discussions and unwilling to answer questions asked of them unless pushed significantly.’

‘Further to the points on the benefits of Socratic questioning, the selection of students to answer questions is tailored to their ability and the intended difficulty of the question. Student D lacks confidence in sharing their thoughts for example, so they and students like them have their confidence built by giving answers to easier questions, building into core questions if their perseverance allows. Improving students such as student C are generally selected for the core questions, to ensure that their grasp of the core concepts is solid and can be worked upon in the independent work. Students such as A and B, who regularly score highly on….’

‘Each task given to students in this class is separated into support (e.g. Student C at the start), core (e.g. Student D, Student C at the end) and extension (e.g. Students A and B) sections, with different skills and levels of understanding required by each section. Each student always has access to all these sections and may attempt which ever they wish, so the differentiation here is not strictly by task. However, during circulation the more able students, usually including A and B, are quietly told that, since they are doing so well on the tasks so far, they might as well move onto the core or extension task, which one being dependent on their ability. Thus, students are differentiated by the expectations that are held of them, and discouragement of LAPs from doing extension questions is avoided (TS1,2,5,6). This has led to students A and B being able to complete high level work without needing to wade through the starting consolidation exercises, and for students B and C to get the practice they need.

The class is set a homework each week covering three bases. The first is a review of the material covered that week, secondly is an application of that material, and lastly is a question encouraging exploration of the material for the next week. This has a dual purpose: Firstly, the data from the first two questions can be used to determine how well students have understood the material. Secondly, the exploration task takes advantage of the pre-test effect investigated by Richland, Kornell and Kao.

This posits that students answering questions incorrectly at first improves later retention of the correct answer. All students were given the..'

Feedback

You have clearly described your chosen pupils and set the scene with their recent progress. Student D is interesting. You have justified why you have changed your approach to respond to students
needs. It would appear you have thought carefully about the choice of examples, so they achieved your objectives. Your work is well written and reflective of your own practice and pupil responses.
This is an excellent pass - you have thoughtfully reflected on your own practice and the needs and responses of your pupils.

Common feedback for literature review

Strengths and potential	**Developmental comments**
Excellent potential to pass at level 7. Clear rationale and reasoning. Appropriate referencing for much of the work. Well structured.	It is generally well written but lacks analysis and reflection which is required to reach level 7. It is generally descriptive in nature and lacks depth.
Very good potential to pass at level 7. A good structure and focus on where it is going and why. Unjustified statements need addressing and reasoning as to why he chose those specific two to discuss.	Very factual does not appear to be engaged with what is written. Has not given his views. Needs to explain what he means so the reader can understand. Lacks reflection, analysis and depth.
Potential to pass at level 7 but needs support in structuring the essay into a coherent form. They need to be clear on their understanding of what an error is and what a misconception is. They then need to identify key themes that are coming out from the literature they have read and what they will be focussing on rather than listing everything that comes up as the word count is too small.	An interesting topic. However, need support for writing English from study skills. Lots of unjustified statements. Quote literature with no analysis, explanation of what it means. A weak attempt.
	Well written and presented but superficial lacks depth, reflection and analysis. Has only really considered 2 sources. Has not really discussed how to develop conceptual understanding. A lot more thought required to reach level required.

Are you able to identity what is wrong about the following quotes from trainees' work?

'She also discussed that she thought her teacher in Year 7 would ask a lot of questions to everybody in the class, but her Year 8 teacher spends a lot more time explaining the content. This implies that her Year 8 teacher doesn't interact as much with students which suggest that there's currently less formative feedback within lessons.'

'A particular student has been chosen for this study who shall be referred to as AO. This student is currently in year 9 set 4 for Mathematics. AO has been chosen for this study as he has made significant progress since the beginning of the year after having been flagged up in a RAP meeting in early January. Student AO completed 3 mock foundation exam papers in late January scoring 31/80, 15/80 and 28/80. These marks constituted an overall grade of 2A. AO is capable student with English as an additional language. Having said that, his English is fantastic and it is not a hindering factor in his attainment in Maths. The main reason AO was chosen for this study is that he is capable of much more than what he has been achieving and should, according to evidence collected from homework and classwork, sit higher maths rather than foundation. Furthermore AFL conducted throughout lessons shows that it is not a lack of talent that is holding him back but a lack of commitment to his studies. He is easily distracted and can be disruptive himself at times. AO could go on to achieve a grade 6 in his GCSE Maths or could go on to achieve a 3 or a 4. The outcome depends on his attitude and the ability of his teachers to motivate him in lessons.'

For ensuring confidentiality on the subject, no school, pupil and teacher name has been mentioned in research study. However, a summative and formative overview of his assessment practices and monitoring records has been provided for understanding the impact of assessment practices on maths learning in the UK. The student has scored a 72% in her maths Easter test (**Appendix 3**) which is 76% for local expected standard and 78% for national expected standard which is showing a proof of the overall progress she has made. Interaction with the teacher has made it clear that the student was able to learn new chapters while also recalling his lessons from the previous class. This was achieved through the feedback assessment practice from the teacher which was maintained throughout. Moreover, the monitoring and record-keeping practices has …

Common feedback for weak and failed assignments

'You have identified the main assessment procedures in schools but have not informed the reader for example, as to who would use summative assessment data outside of schools. None of your work has been supported with literature and you have not been able to compare theory with practice.

You discuss about analsying your student, but you make unjustified sweeping statements about your findings and do not explain to the reader what you have put into place to support the student. i.e. 'severe sanctions for lack of or poor homework - what are these sanctions? '

'You have demonstrated a clear understanding of the various types assessment practices and their purpose with appropriate justification. You need to at least mention what you use and how practice compares with theory, but in a succinct fashion. You then go into far to much detail about the assessment practices used in your school and have lost your word count here. There is little comparison between theory and practice. You have missed the remit about sharing with the reader why you chose your student. For example, are they an underachieving student? If so then you need to analyse the reason why this might be so and discuss strategies that you may have used in supporting them to make progress and if they were successful or not. When analysing the data over her school career (year 7 -10) did you notice any decline in her attainment, attendance, attitude and effort etc.? Was she chatty and easily distracted in class? If so, what did you do about it and what impact did it have on her? On the other hand, she may be a very quiet student?

You must proof-read your work carefully to avoid the errors and mistakes throughout.'