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EXAM ANXIETY: CAN STRATEGIC USE OF STARTER TASKS REPLICATE AND HENCE REDUCE MENTAL BLOCKS IN TESTS?

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Introduction

In the realm of secondary education, exam anxiety is a pervasive issue that affects a significant portion of students, with estimates ranging from 20% to 40% globally (von der Embse et al., 2018). This anxiety, characterized by physical, emotional, cognitive, and behavioral symptoms, can severely impair academic performance, leading to lower test scores and overall achievement (Segool et al., 2013). This action research investigates the potential of starter tasks to alleviate exam anxiety by easing students into the testing process, thereby improving their performance. Addressing this issue is crucial because high levels of test anxiety not only hinder academic success but also impact students' self-esteem and long-term educational outcomes. By exploring and implementing strategies to reduce exam anxiety, educators can create a more supportive and effective learning environment, ultimately fostering better academic and emotional well-being among students. The significance of this problem is underscored by research indicating that high anxiety increases cognitive load and reduces working memory capacity, further exacerbating the challenges students face during exams (Owens et al., 2012). Therefore, understanding and mitigating exam anxiety is essential for enhancing student performance and overall educational experience.

Recognizing that increased teacher workload and reduced instructional time are major concerns for educators, I chose to explore the use of starter tasks. Implementing new strategies often comes with the risk of additional demands on teachers or cutting into essential teaching time, both of which are undesirable and challenging to manage. By integrating starter tasks, I aimed to find a balance that allows for addressing exam anxiety effectively without imposing extra burdens on teachers or sacrificing the comprehensive coverage of the curriculum. This approach ensures that the strategy is practical and sustainable.

Background of the Problem

As a secondary mathematics teacher at Hartland International School, I have observed firsthand the detrimental effects of test anxiety on my students. Many students report feelings of dread, mental blocks, and an inability to perform under exam conditions. They have regularly made comments that they can perform skills in class but not under test conditions and that their mind goes blank during testing, prompting me to investigate alternative factors that influence test performance outside of preparedness and mathematical ability. Students display agitation around testing and regularly ask if a score will contribute to their report grade, and visibly relax when the answer is no. Outside of my observations or student demeanor, I recorded test scores for my year 10 class that were lower than I expected from observing their interaction with material and work completed in class. Whilst indeed they were adjusting to GCSE standard of questions, the disparity between their classwork and test scores also encouraged me to evaluate the impact of exam anxiety on this class and explore methods that could mitigate it.

Literature Review

The prevalence of test anxiety is significant (von der Embse et al., 2018). Factors contributing to this anxiety include fear of failure, lack of preparation, high stakes testing environments, and pressure from parents and teachers (Putwain, Woods & Symes, 2010) and symptoms of test anxiety can be physical, emotional, cognitive, and behavioural, all of which can impair academic performance by increasing cognitive load and reducing the working memory capacity available for problem-solving during tests (Owens et al., 2012). Research indicates that test anxiety levels peak in middle adolescence and are generally higher in female students compared to male students (Hembree,

1988). Implementing strategies to reduce test anxiety is crucial for improving students' academic outcomes and their overall educational experience.

Research on test anxiety highlights several effective strategies for alleviating its impact on students.

- Relaxation Techniques such as deep breathing, progressive muscle relaxation, and mindfulness meditation have been shown to reduce physiological symptoms of test anxiety (Rice et al., 2006).
- Positive self-talk is a strategy which correlates with higher levels of self-esteem, better stress management, and improved academic performance (Burnett, 1999).
- Study Skills Training enhances students' confidence by teaching effective study and time management skills, which can subsequently lower anxiety levels (Putwain & Best, 2011).
- Practice Tests are another valuable tool; regular exposure to test-like conditions helps desensitize students to the testing environment, thereby reducing associated fears (Cassady & Gridley, 2005).
- Starter Tasks—simple, low-stakes activities at the beginning of tests—can ease students into the testing process, reducing initial anxiety and mental blocks (Pekrun et al., 2002).

Methodology

There were two stages to my investigation. Firstly, I surveyed several students across KS3 and KS4. This was to establish how prevalent exam anxiety was within Hartland International School and discuss student ideas on testing to identify formats which may work for effective exam-anxiety reducing starter tasks.

I then identified two formats for starter tasks. The first was silent closed-book tasks formally marked by peers using a mark scheme. This was designed to replicate the test experience. The second was informal starter tasks focusing on exam style problem-solving, a skill surveyed students said made them nervous in tests. Progress was monitored through post-test surveys which monitored anxiety levels and student perception of the strategy tried, and quantitative test results themselves.

Participants

My initial survey to identify the prevalence of exam anxiety asked 67 students (40 in Year 8 and 27 in Year 10) for their opinions. I then examined strategies with a focus group of my Year 10 mathematics class at Hartland International School. This mixed-ability group, targeting grades 5–8 at the GCSE level, and included 19 students—17 females and 2 males. The students in this group had previously demonstrated lower-than-expected assessment scores and exhibited low confidence in test situations.

Data Collection

Year 8 and 10 were surveyed using a Microsoft teams form. Included in the form was the Nist and Diehl (1990) short questionnaire (Figure 1), which is designed to determine whether a student experiences a mild or severe case of test anxiety. The questionnaire scores range from 10 to 50, with a low score (10–19) indicating little to no test anxiety. Scores between 20 and 35 suggest the presence of some test anxiety characteristics, likely at a manageable and potentially beneficial level. Scores above 35 indicate a severe and unhealthy level of test anxiety, requiring attention and intervention. This tool is useful for identifying students who may need additional support to manage their test anxiety effectively. Questions were also asked to identify which situations considered a test, and how students perceived their ability and performance in mathematics.

Two testing formats were used with the year 10 focus group. The first was a 10-minute test done in test conditions at the end of a lesson. Students sat a test before the first starter activity (peer-marking) was trialed and after, with change in scores tracked. They were also given a questionnaire before the trial and after. This included a variation of the Nist and Diehl questionnaire to track anxiety and asked student opinion of the starter task strategy itself. This survey also revealed that students did not take these unofficial 10-minute tests as seriously as the official termly tests that would be reported on, and so I used the official termly test as the metric for quantitative tracking of progress for the second starter activity (problem-solving focus) moving forwards. Again, students were given a questionnaire before and after to track anxiety levels and opinions.

Figure 1: Test Anxiety Questionnaire (Nist & Diehl, 1990)

Never	Rarely	Sometimes	Often	Always
1	2	3	4	5

- I have visible signs of nervousness such as sweaty palms, shaky hands, and so on right before a test.
- I have "butterflies" in my stomach before a test.
- I feel nauseated before a test.
- I read through the test and feel that I do not know any of the answers.
- I panic before and during a test.
- My mind goes blank during a test.
- I remember the information that I blanked on once I get out of the testing situation.
- I have trouble sleeping the night before a test.
- I make mistakes on easy questions or put answers in the wrong places.
- I have difficulty choosing answers.

Data Analysis

When analysing the initial student survey of students, I found that 17% of students across the two year groups are considered to have unhealthy amounts of test anxiety as per this testing metric.

When considering whether this is representative of both year 8 and year 10, I found the proportion of students with a score indicative of unhealthy amounts of test anxiety was similar in both (15% in year 8 and 22% in year 10). This indicates test anxiety is prevalent in Hartland International School across ages and regardless of whether students are undertaking an official exam course.

Results

Silent Starter with Peer Marking

After employing this strategy, there was what I consider to be a significant increase in test score although no significant changes to anxiety levels. This improvement in score may be because 87% of students found recall questions in starter tasks helpful for practicing exam techniques and 100% of students found it beneficial to know how marks are allocated for these tasks. Low percentages of students (20-60%) indicated peer marking to be of value in replicating the text experience or encouraging better exam technique. Despite this, only around half of students (53%) felt able to apply skills learnt to starter tasks.

Problem Solving Focus

After employing this strategy, there was what I consider to be a significant increase in test grade although also a somewhat significant increase to anxiety levels. High proportions of students (79%+) saw the value in problem solving questions in starter tasks and wanted to do this more, despite identifying these as an area they lacked confidence in. Despite this, only just over half of students (57%) felt able to apply skills learnt to starter tasks.

Figure 2: Key Reasons for Student’s Test-Related Nervousness



Figure 3: Breakdown of Initial Survey Results for Anxiety

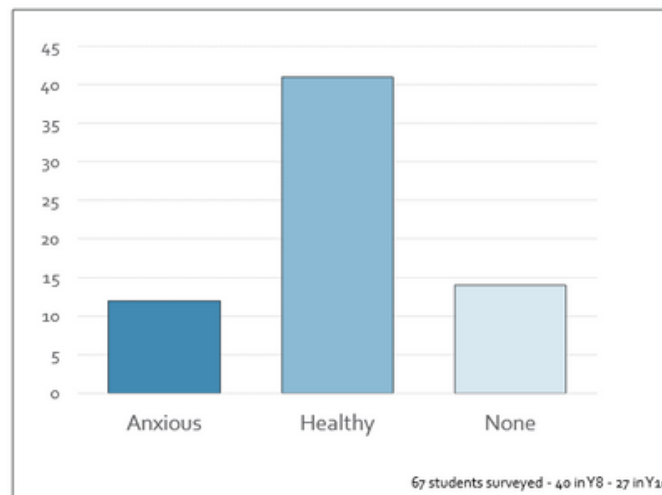


Figure 4: Breakdown of Initial Survey Results for Anxiety Split by Year Group

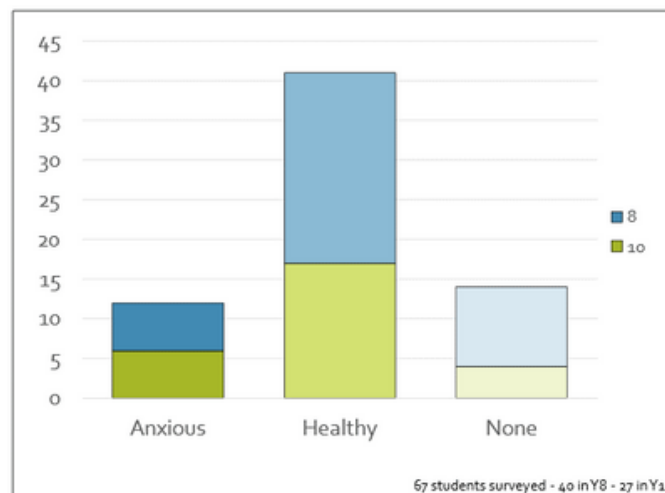


Table 1: Anxiety vs Score Changes After First Style of Starter

Average Anxiety Score Change	+ 0.571 (3sf)
Average Score Change	+ 1.36 (3sf)

Table 2: Proportion of Students Who Agreed With Each Statement When Surveyed After First Style of Starter

Question	Proportion Who Agree
Recall questions in starter tasks help me to practice my exam technique	87%
I can apply the exam skills I learn in starter tasks to tests	53%
I find it helpful to know how marks are allocated for the questions completed during the starter tasks	100%
Learning how marks are allocated during starter tasks makes me write down more working out in tests	93%
Knowing my starter task will be marked by someone else means I attempt more questions	60%
Knowing my starter task will be marked by someone else means I show more working out	36%
Knowing my starter task will be marked by someone else replicates some of the pressure of a test situation	47%
I get nervous when my peer is marking my work	20%
I find it useful to have my work marked by a peer	53%
I find it useful to mark my peer's work	60%

Table 3: Anxiety vs Score Changes After Second Style of Starter

Average Anxiety Score Change	+ 2.27 (3sf)
Average Score Change	+ 1.25 (3sf)

Table 4: Proportion of Students Who Agreed With Each Statement When Surveyed After Second Style of Starter

Question	Proportion Who Agree
I feel confident answering worded problem-solving questions in tests	36%
Wording problem-solving questions make me nervous	64%
I can attempt to answer worded problem-solving questions in tests	79%
I can practice my exam technique when I attempt worded problem-solving questions in starter tasks	79%
I can apply the exam technique on worded problem-solving practiced in starters to tests	57%
I would like to practice worded problem-solving questions more often	86%

Discussion and Reflections

The student surveys indicate that starter tasks have been instrumental in increasing confidence with specific skills and techniques. A significant majority of students reported that these tasks helped them develop a better understanding of the subject matter and improved their exam techniques. This positive feedback is supported by improved test scores, showing that the strategies are effective in enhancing academic performance. However, despite these tangible improvements, students' self-belief in their ability to perform well in exams remains disproportionately low. This disparity between the data and students' perceptions suggests that while starter tasks are beneficial, additional measures may be necessary to boost students' confidence in their overall exam performance. Addressing this issue is crucial, as fostering a stronger belief in their abilities could further enhance students' academic success.

and reduce exam-related anxiety.

With academic successes in mind, I will of course continue to integrate effective strategies into my starter tasks. Recall will be a regular feature with discussion of mark schemes and mark allocation. I will aim to ensure I include a more difficult problem-solving question to encourage development of this I will not prioritise peer marking of work as the students did not express that they saw value in this.

However, with anxiety scores largely remaining the same, if not rising, I need to take a more holistic approach to test taking and integrating strategies seen in class to the test environment. I will place greater emphasis on linking starter tasks with actual exam scenarios, being even more explicit with my language, to help students make the connection between practice and performance. I also plan to take a more holistic approach, linking in with the wellbeing department in school so conversations around test anxiety and strategies to deal with it happen much earlier in the year. I will discuss in-test relaxation techniques and breathing exercises in class with students, so they are equipped with an anxiety toolkit to use if ever the nerves hit.

Conclusion

To summarise, students generally see the value in recall tasks during starter activities and gain confidence with key skills in that context. However, there is a struggle to connect starter tasks with exam performance fully. While grades have improved, anxiety levels have not significantly decreased, suggesting that while starter tasks are beneficial, they are not a complete solution to test anxiety.

References

- Burnett, P.C. (1999). Children's self-talk and academic performance. *Educational Psychology*, 19(1), 79-89.
- Cassady, J. C., & Gridley, B. E. (2005). The effects of online formative and summative assessment on test anxiety and performance. *Journal of Technology Learning and Assessment*, 4(1), 4-30.
- Hembree, R. (1988). Correlates, causes, effects, and treatment of test anxiety. *Review of Educational Research*, 58(1), 47-77.
- Nist, P. A., & Diehl, M. (1990). Test Anxiety Questionnaire. Retrieved from [http://web.ccsu.edu/fye/teachingresources/pdfs/test anxiety questionnaire.pdf](http://web.ccsu.edu/fye/teachingresources/pdfs/test%20anxiety%20questionnaire.pdf)
- Owens, M., Stevenson, J., Hadwin, J. A., & Norgate, R. (2012). Anxiety and depression in academic performance: An exploration of the mediating factors of worry and working memory. *School Psychology International*, 33(4), 433-449.
- Pekrun, R., Goetz, T., Titz, W., & Perry, R. P. (2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. *Educational Psychologist*, 37(2), 91-105.
- Putwain, D. W., & Best, N. (2011). Fear appeals in the primary classroom: Effects on test anxiety and test grade. *Learning and Individual Differences*, 21(5), 580-584.
- Putwain, D. W., Woods, K. A., & Symes, W. (2010). Personal and situational predictors of test anxiety of students in post-compulsory education. *British Journal of Educational Psychology*, 80(1), 137-160.
- Rice, K. G., Leever, B. A., Christopher, J., & Porter, J. D. (2006). Perfectionism, stress, and social (dis)connection: A short-term study of hopelessness, depression, and academic adjustment among honors students. *Journal of Counseling Psychology*, 53(4), 524.
- Segool, N. K., Carlson, J. S., Goforth, A. N., von der Embse, N., & Barterian, J. A. (2013). Heightened test anxiety among young children: Elementary school students' anxious responses to high-stakes testing. *Psychology in the Schools*, 50(5), 489-499.
- von der Embse, N., Jester, D., Roy, D., & Post, J. (2018). Test anxiety: Effects, predictors, and correlates: A 30-year meta-analytic review. *Journal of Affective Disorders*, 227, 483-493.