Does ReadTheory improve students' comprehension skills and/or enjoyment of reading?

Introduction

I conducted an eight-month action research project, from October 2017 to June 2018, in the field of Key Stage 3 reading. My aim was to see how we could improve students' reading comprehension by using the program ReadTheory, which sets reading quizzes with multiple-choice questions and measures students' performance to raise or lower their attainment level. I was also keen to see whether using this program helped to promote reading for pleasure.

Context and Identifying the Need

There are a considerable number of benefits associated with reading for pleasure. The inherent joy is self-evident, but research by Clark and Rumbold (2006) also shows that leisurely reading at a young age helps to improve reading attainment, writing proficiency, text comprehension, grammatical awareness and vocabulary development. Young readers also broaden their general knowledge, gain a better understanding of other cultures and acquire a deeper insight into human nature. The pastime also creates greater self-confidence as a reader, with reading likely to remain pleasurable in later life.[1]

The link between an enjoyment of reading and scoring well in reading assessments is borne out in a range of research.[2] In a survey of over 18,000 UK children aged between 9 and 14, Clark (2011) discovered that those who claimed to enjoy reading very much were six times more likely to read above the expected level for their age than those who did not enjoy reading. It was also 11 times more likely that those who did not enjoy reading at all were reading below the level expected for their age than those who enjoyed reading very much.[3] Finding a way to increase a love of reading among students therefore seems key to raising reading ability.

The most recent research into UK reading trends shows that most reading is now performed online, with text messages, magazines, websites and emails proving to be the most common reading choices for young people.[4] Although there are undoubtedly questions about the worth of such reading compared with enjoying a novel, the PISA 2009 executive summary reveals that students "who are extensively engaged in online reading activities, such as reading e-mails, chatting on line, reading news on line, using an online dictionary or encyclopaedia, participating in online group discussions and searching for information on line, are generally more proficient readers than students who do little online reading". The same report also states that while students who read fiction are more likely to achieve high scores, it is students who read a wide variety of material who perform particularly well in reading tasks.[5]

Reflecting on this information, I believed that teachers should perhaps take advantage of students' tendency to read online and capitalise on the way in which it is shown to help create more proficient readers. Online resources could be key to developing a greater love of reading and enabling a consequent increase in reading ability, and vice versa.

Before I began my subsequent research into online reading, it was evident that not all Key Stage 3 students at Putney read for pleasure, as evidenced in honest student feedback and some relatively sparse reading records in

[1] Clark, C and Rumbold, K (2006) Reading for Pleasure: A Research Overview (National Literacy Trust)
[2] Twist, L, Schagen, I and Hodgson, C (2007) Progress in International Reading Literacy Study (PIRLS): Readers and Reading: National Report for England 2006 (National Foundation for Educational Research)
[3] Clark, C (2011) Setting the Baseline: The National Literacy Trust's First Annual Survey into Reading – 2010 (National Literacy Trust)
[4] Clark, C and Douglas, J (2011) Young People's Reading and Writing: An In-Depth Study Focusing on Enjoyment, Behaviour, Attitudes and Attainment (National Literacy Trust)
[5] OECD (2010) PISA 2009 Results: Executive Summary

exercise books. This was, however, not due to any educational shortcomings or lack of ability on those students' parts: the Independent Schools Inspectorate 2015 report found the school to be exceptional, and the most recent IGCSE examinations saw 98% of students achieve A* or A grades in English Language and 96% achieve the same in English Literature. Early research in my project revealed that a number of Putney students found reading boring or felt that they lacked the time to immerse themselves in books, but there is also evidence that children in England as a whole read less frequently for pleasure than children in many other countries.[6] Indeed, they seem to read less independently and find less enjoyment in reading than their foreign peers.[7] I was, therefore, keen to see whether technology could help to address this matter and encourage or ignite a passion for reading.

Research and Innovation

I had heard of ReadTheory during a research discussion with a teacher from another school. It is a free-to-use American[8] program designed to improve reading comprehension skills for students in Grades 1 to 12 (Years 2 to 13 in the UK). Students encounter a series of factual prose passages and accompanying multiple-choice questions of various levels of difficulty. Algorithms are used to detect how well students have answered the questions, and they are subsequently moved up or down a level so that the next passage provides an appropriate degree of challenge. A score of over 90% in a quiz will see the student move up a grade level, while a score below 70% will cause them to go down. The system uses Lexile (lexile.com) level information and benchmarks established by the Common Core State Standards Initiative (corestandards.org) to help determine starting points and performance levels for students. Students can monitor their progress but cannot see the progress of other students.

Students sit an introductory test that places them at an appropriate starting level. The quizzes assess students' understanding of craft, structure, knowledge and key ideas and details in the passage. Knowledge Points are also awarded as a result of good performance, and these help to motivate students by providing them with one of 20 status titles (starting at 'Luminary' and moving up to 'Theorist'). This 'gamification', as Kapp calls it,[9] helps to keep students engaged and responds to the growing preference for online reading and games.

A 2016 study by the University of North Carolina surveyed over 1,100 professional educators who were using ReadTheory. Their responses gave strong support for ReadTheory's positive impact on student grades, standardised test scores and overall reading confidence and ability. Over 80% of respondents reported that ReadTheory had contributed to an increase in scores, and over 70% of educators noticed a positive effect on student grades. Nearly 70% of respondents reported that ReadTheory had increased their students' confidence in taking reading comprehension tests.[10] A subsequent study at Miyazaki International College, Japan, yielded positive levels of satisfaction overall with its 36 respondents.[11]

Although these findings are encouraging, I wanted more than a collation of surveys, so I decided to trial ReadTheory with my 27 Year 8 and 20 Year 9 students. I explained to them how the system worked and asked all students to complete the pre-test silently on their iPads in class. They had the whole lesson to do this because I wanted them to take their time with their answers. Any remaining time could be spent completing additional quizzes. Those students who were absent sat their pre-test with me in the same conditions at a later stage.

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[6] Twist, L, Schagen, I and Hodgson, C (2007) Progress in International Reading Literacy Study (PIRLS): Readers and Reading: National Report for England 2006. (National Foundation for Educational Research)

[7] Cremin, T, Mottram, M, Collins, F, Powell, S, and Safford, K (2009) Teachers as Readers: Building Communities of Readers 2007-08 Executive Summary (The United Kingdom Literacy Association)

[8] Occasional Americanisms in the passages have not had a detrimental effect on student spellings, which we check carefully.

[9] Kapp, K (2012) The Gamification of Learning and Instruction: Game-Based Methods and Strategies for Training and Education (San Francisco, USA)

[10] Romeo, G, Hock, T, and Plante-Kropp, A (2016) A Preliminary Study Concerning the Effectiveness of an Online Reading Comprehension and Writing Program (University of North Carolina, USA

[11] Mork, CM (2017) ReadTheory for University EFL Reading Practice – Perceptions on Progress (Miyazaki International College, Japan)

I assigned quizzes as homework in batches of 10 or 20, with at least two weeks for completion. I would set a total of 100 compulsory quizzes by the end of the project. Students were encouraged to complete more, if they wished, but I stressed that these quizzes should not be rushed and should all be the individual's own work. I made it clear that they would otherwise be missing out on the benefits and skewing their own reading data. The ability to monitor every student's progress remotely made it clear which students were leaving the quizzes until the last minute.

Before the end of the autumn term, I decided that I would award first-, second- and third-place certificates to students who had accrued the most Knowledge Points by a specified time in the final week. By the spring and summer terms, I had also included a 'most progress' certificate to motivate those students who felt they would never have a chance of securing one of the top three places.

Data Highlights

- The average reading ability of each class **increased by the equivalent of almost one year in high school** during the course of the project, with **some students increasing by two to three years**.
- Several students completed between **three and four hundred additional quizzes**, suggesting that they found a considerable amount of pleasure in this particular reading activity.
- A month into the project, **44% of Year 8 students said they were choosing to read more** since starting ReadTheory (beyond the quizzes set for homework), with **9% saying they were now choosing to read a lot more**.
- Most students in the Year 9 class were also choosing to read more since starting ReadTheory: **53% had increased their reading, with 16% increasing it a lot**.
- At the end of the project, the percentage of **Year 8 students claiming to love reading had risen from 35% before ReadTheory to 43% at the end**. **The number who hated reading had dropped from 22% to just over 7%. Only 8% now claimed to read rarely or never, rather than 22%.**

Survey Data

I surveyed my Year 8 and 9 classes after a month of using ReadTheory and a minimum of 40 quizzes to see how they believed its use had helped improve their reading skills and enjoyment of reading. The surveys were conducted anonymously via SurveyMonkey.

Although 35% of the Year 8 class (23 respondents) claimed to love reading before ReadTheory, 22% hated or disliked it. While 27% read every day, 22% read rarely or never.

After a month of using ReadTheory, Year 8 students awarded an average of 70 when asked how much they enjoyed taking ReadTheory quizzes from 1 (low) to 100 (high). They awarded 59 when asked how much they thought ReadTheory was helping to improve their reading ability. Encouragingly, 44% of students said they were choosing to read more since starting ReadTheory (beyond the quizzes set for homework), with 9% saying they were now choosing to read a lot more. Their own reading book was the most popular form of additional reading.

There was a greater natural love of reading within the Year 9 class (19 respondents), with 48% of students saying they loved reading before ReadTheory. Some 16% disliked reading, but none claimed to hate it. Nevertheless, 11% still claimed to read rarely or never, with 27% reading every day.

After a month of using ReadTheory, Year 9 students awarded an average of 70 (the same as Year 8) when asked how much they enjoyed taking ReadTheory quizzes from 1 (low) to 100 (high). They awarded 58 (one less than Year 8) when asked how much they thought ReadTheory was helping to improve their reading ability. As with the Year 8s, most students in the Year 9 class were also choosing to read more since starting ReadTheory: 53% had increased their reading, with 16% increasing it a lot. Their own reading book was, again, the strong favourite.

So, summarising findings after a month, both the Year 8 and 9 classes gave an average of 70 out of 100 for ReadTheory enjoyment. Many might say this is an especially high figure for a pursuit that forms their homework. The average of 59 out of 100 for perceived reading improvement might suggest either minor or gradual improvement in reading, but the discovery that almost half of each class had chosen to read more in their own time was certainly pleasing.

I surveyed both classes again at the end of the project, after all students had completed 100 quizzes. The percentage of Year 8 students (19 respondents) claiming to love reading had risen from 35% before ReadTheory to 43% at the end. The number who hated reading had dropped from 22% to just over 7%. Only 8% now claimed to read rarely or never, rather than 22%. The percentage of those now choosing to read more since using ReadTheory was 23%, with student comments highlighting an increasing level of homework and co-curricular commitments.

Responses from Year 9 (14 respondents) revealed that the biggest share (48%) liked or loved reading. The number of students reading every day had fallen to 22%, the same as those now reading rarely, and a lack of time in the summer term was generally claimed to be responsible for this downturn. Indeed, 27% of students still claimed to be reading a little more since using the program. Nevertheless, we should recognise that a lack of perceived or real improvement in the ReadTheory quizzes could possibly undermine the confidence and enjoyment for some students.

The average score out of 100 for enjoyment of using ReadTheory was now 43 for Year 8 and 53 for Year 9. The degree to which students believed the program was helping to improve their reading skills was 46 and 45. The novelty of the program had worn off for some, but for others it had proved compelling.

Quiz Data

In Year 8, Student A had chosen to complete 447 quizzes (8,610 Knowledge Points), Student B 441 (8,727 Knowledge Points) and Student C 394 (7,866 Knowledge Points), with the number of quizzes completed not necessarily reflecting the Knowledge Points acquired. They were awarded the relevant certificates for this number of points (against a class average of 2,684), but their improvement in attainment was even more pleasing.

Student A's pre-test average was 7G (American Grade 7, or UK Year 8) and she ended with 9.12G, or the equivalent of a Year 10 student. Student B's reading pre-test average was 7G and she ended with 7.99G, indicating an improvement of almost one academic year. Student C began with a 9G pre-test average and ended with 8.8G, which remains close to Year 10 ability. Please see Appendix A for graphs of their performance.

As a class, the pre-test average was 6.70G, or just below the level of Year 8. The final average was 7.55G. As a whole, the students were making progress with the program, however gradual or occasionally flawed their performance might be.

In Year 9, the student with the highest number of Knowledge Points (2,916 against an average of 1,983) had increased from a 7G pre-test average to 9.36G, or the level of a student almost midway through Year 10. The student with 2,747 Knowledge Points had increased from 5G to 8.38G. The third-place student, with 2,441 Knowledge Points, had increased from 7G to 9.93G, which was almost Year 11 level. The Year 9 pre-test average was 7.20G and ended at 8.05G. Please see Appendix B for graphs of their performance.

Additional Observations

There was a visible amount of pride as the students received their certificates for achieving the most Knowledge Points. In both classes, the spring term's 'most progress' award was presented to students who were not in the top three places, which indicates that the desire to take these quizzes was unaffected by not previously being placed. Interestingly, however, the recipient of this award in each class at the end of the summer term was a student in the

top three at the end of the spring term who also came in second place in the final three. The certificates seem to have provided the additional level of motivation for students close to the top of the class.

Year 8	Autumn	Spring	Summer
First place	SE 8,006	SE 8,214	SE 8,727
Second place	GL 7,501	GL 7,712	AMB 8,610
Third place	AMB 6,781	AMB 7,275	GL 7,866
Most progress	N/A	AA 1,315	AMB 1,335

Year 9	Autumn	Spring	Summer
First place	NC 2,505	NC 2,865	NC 2,916
Second place	JB 1,296	IMB 1,981	IMB 2,747
Third place	IMB 1,087	GD 1,687	GD 2,441
Most progress	N/A	CP 971	IMB 766

(Student initials and Knowledge Points accrued)

The anonymous comments in the student surveys revealed that dropping a level was quite demotivating for some students. Some felt the difference in difficulty ability for the quizzes was sometimes quite pronounced, and the swiftness with which the system moved users up or down a level was also mentioned. One student said: "There is a massive difference between level 11 and level 12 [and] because of this I am constantly flicking between levels as one is too easy and then the next is too hard." Another student said the inability to return to questions that had been mistakenly answered was a little frustrating.

Some said they really enjoyed the challenge and being able to complete a quiz whenever they had a spare moment. A few students mentioned how the nature of the passages not only broadened their vocabulary but also helped to increase their general knowledge. Several students specifically praised the competitive element and the ability to increase one's rank, and one student said that finishing a quiz with a perfect score was a real confidence boost. One student wished to see other people's progress as well as her own, saying that this would be a motivational factor. Two students said they would like to continue using ReadTheory over the coming years and requested that they be allowed to retain their user accounts.

The final survey also revealed that the main reason students were not reading outside of class as much as they should was due to a perceived lack of time. Homework and co-curricular commitments have not only affected general reading for pleasure but also, it seems, the ReadTheory results. One student said: "As much as I love reading, I know many of those quizzes have been rushed and I know that at least half the class would agree with me." This is likely to be, at least in part, the result of students leaving their quiz homework until the last minute. Little and often may, therefore, be the best way to achieve more realistic results and see more convincing improvement.

Conclusions

The findings indicate that ReadTheory can be a useful tool to improve students' reading comprehension. The average reading ability of both classes increased by the equivalent of almost one year in high school during the course of the project, with some students increasing by two to three years. This may partly be due to the appropriate development of the skills being tested, and it may also be due to greater focus on the requirements of comprehension questions. Whatever the reason for such improvement, with some students' almost achieving average reading levels of Year 11, the students will undoubtedly benefit from the repeated process of reading through passages, considering questions and evaluating which of the answers is mostly like to be correct.

Besides the attainment data, there were plenty of positive student comments about ReadTheory in the final survey. While some students found the quizzes a chore, a number truly enjoyed the program and recognised how it had helped their ability to comprehend passages while improving their vocabulary and general knowledge.

It is also pleasing to note that approximately half of each class said they were choosing to read more as a result of ReadTheory. Even after the resource became less of a novelty and the students entered the summer examination season, we still had roughly a quarter of each class saying that ReadTheory was inspiring them to read more. The fact that some students were electing to complete between three and four hundred additional quizzes also suggests that they found a considerable amount of pleasure in this particular reading activity.

The competitive element provided by Knowledge Points and the awarding of certificates seems to be more of a motivation for the most-able students who know that completing a few more quizzes will yield a commensurate bounty. Those less-able will possibly feel more frustrated by the fact that they are spending the same amount of time completing quizzes but progressing less. It will take more to convince those students that their hard work will eventually, gradually pay off. The 'most progress' award certainly had the desired effect by inspiring students to apply themselves a little more, but additional measures are needed if we are to keep the less-confident readers committed to the program.

Evaluation

It would be remiss to say that the impressive results seen with some students unquestionably equated to improvement in reading comprehension, but their progress from one quiz to the next does seem to suggest that this is the case. A series of supplementary class-based comprehension tasks throughout the year and, ideally, beyond would help to show just how reliable and steady the rate of progress with ReadTheory can truly be.

In the same way, we cannot determine for certain which factors were responsible for some performing less well than expected. Leaving homework until the night before it is due can have a huge impact on ReadTheory levels, and my remote monitoring of students' quizzes reveals that a number of students rushed through a batch of quizzes shortly before they had to be completed. By setting the pre-test in class, I have quite a reliable indication of the students' ability at the beginning of the project; when the quizzes became homework, a number of additional variables will have come in to play.

If we decide to continue with this and to trial it with other teachers and other classes, then I will certainly suggest a 'little and often' approach to the homework. As we have the means to detect which students are leaving their homework until the last minute, as well as being able to see a pattern with students who are struggling to progress, this can also become an ideal resource that allows us to intervene and support in a way that traditional homework tasks will not allow. While rewarding the students who are achieving the highest number of Knowledge Points, we must also seek to ensure the less-able see this as a motivational experience.

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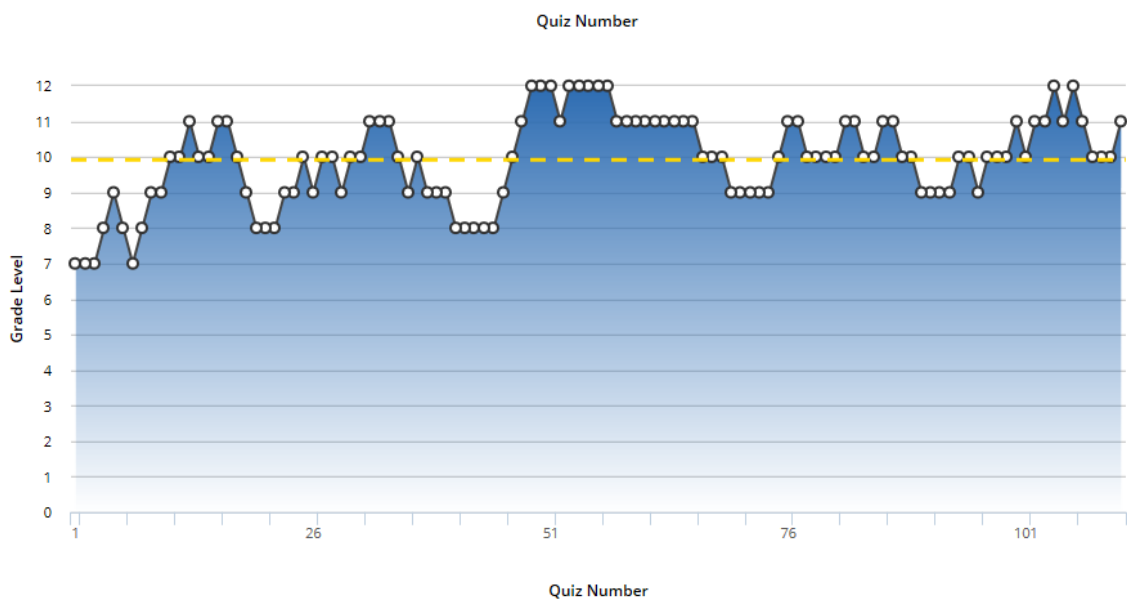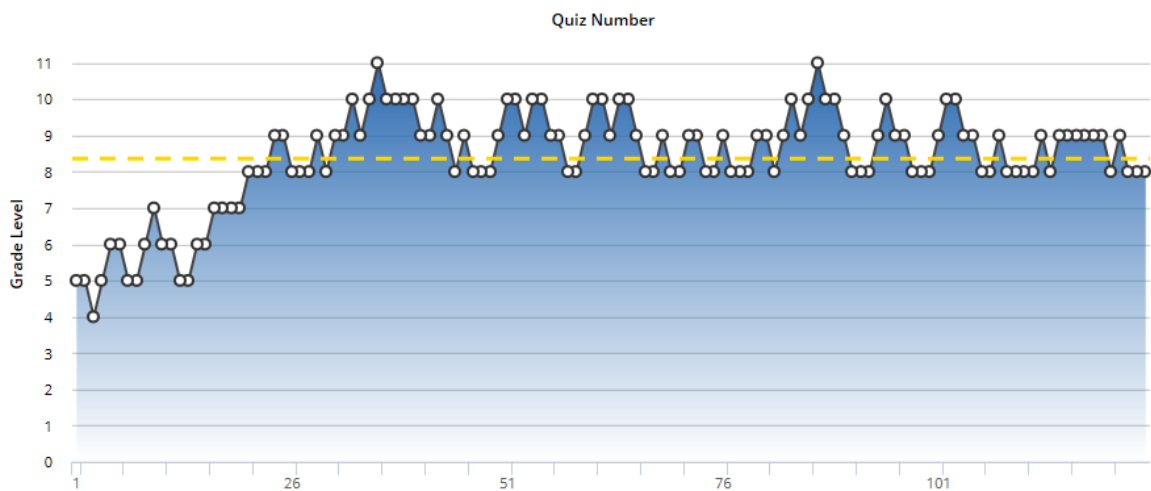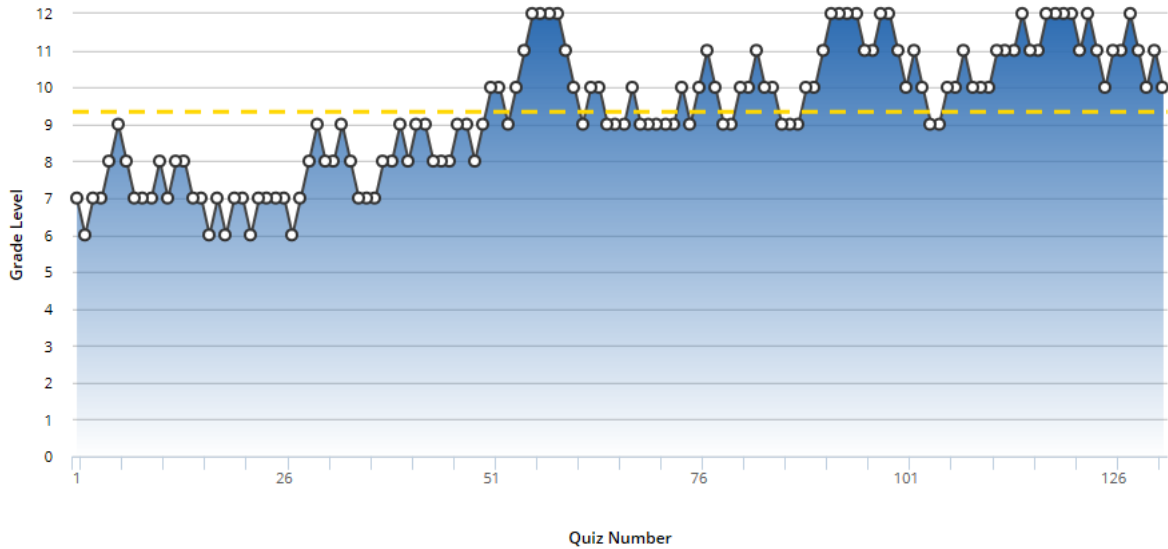
**Appendix A: Year 8 – US Grade Level Progression for Students A, B and C**

UK year groups are one above the US grades seen below (Year 8 equals Grade 7). The yellow line indicates each student's average US grade level at the end of the project.
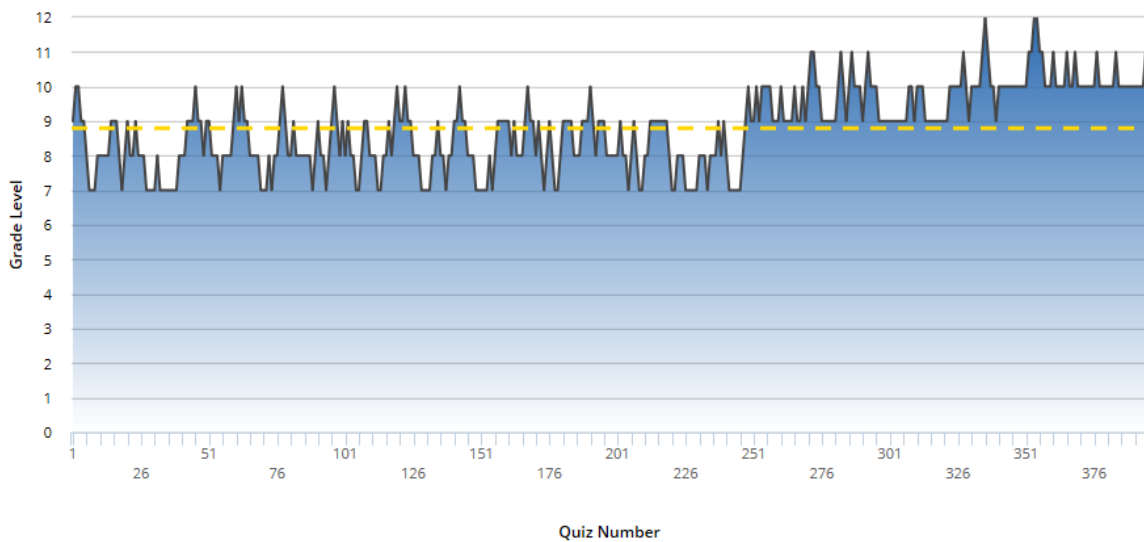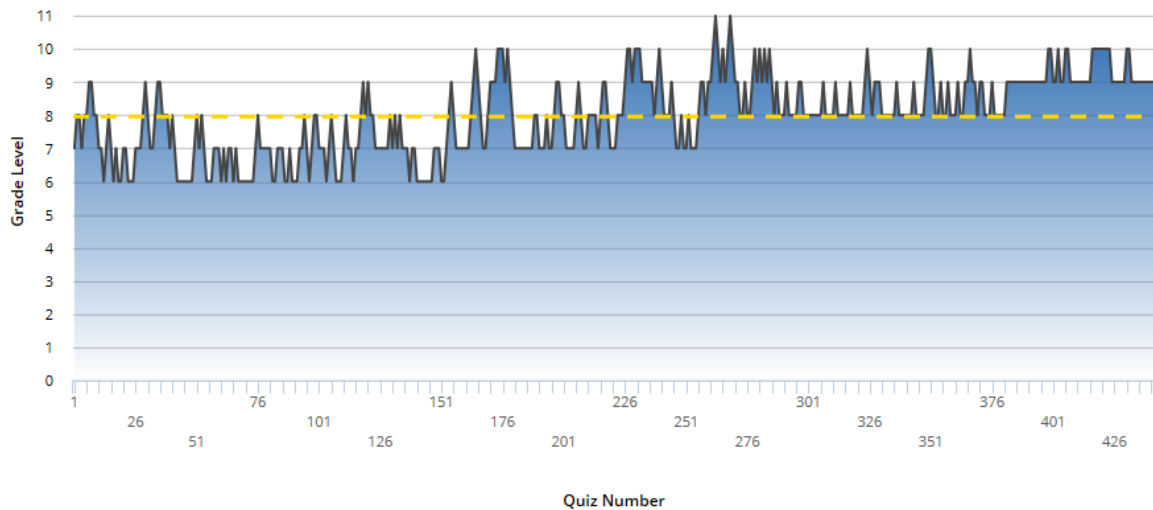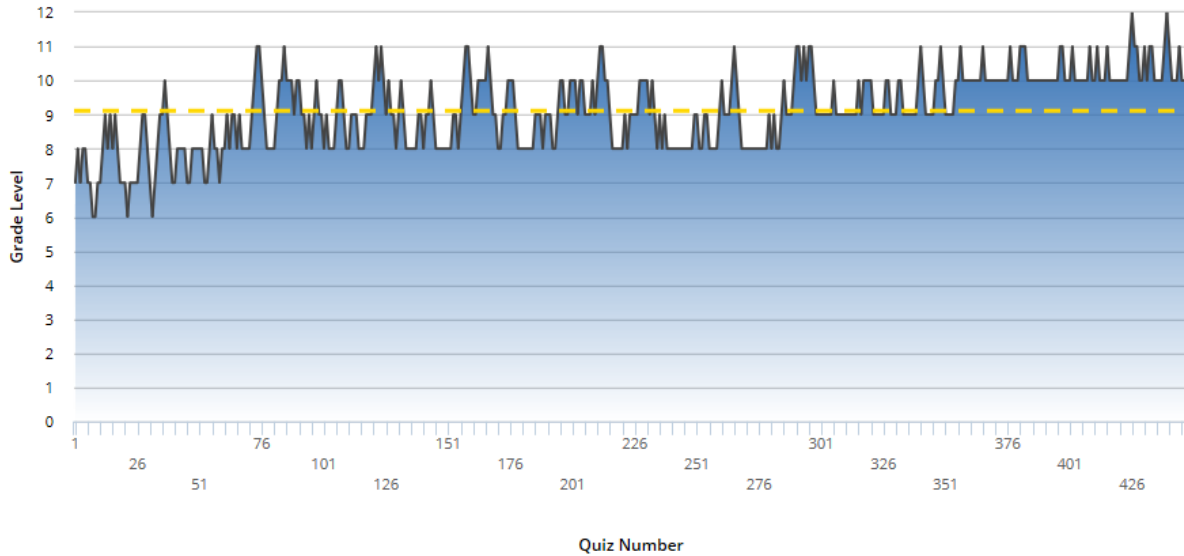
Appendix B: Year 9 – US Grade Level Progression for Students A, B and C

UK year groups are one above the US grades seen below (Year 9 equals Grade 8). The yellow line indicates each student's average US grade level at the end of the project.

Appendix C: Years 8 and 9 – US Grade Level Progression and Lexile Progression for the Whole Class

UK year groups are one above US grades (Year 9 equals Grade 8). The diamonds indicate each student's pre-test grade level and the blue bar shows their overall progress. The students whose overall performance fell short of the pre-test performance were typically those students who had completed the minimum number of quizzes and whose effort with the homework was questionable.

Year 8 – Grade Progression
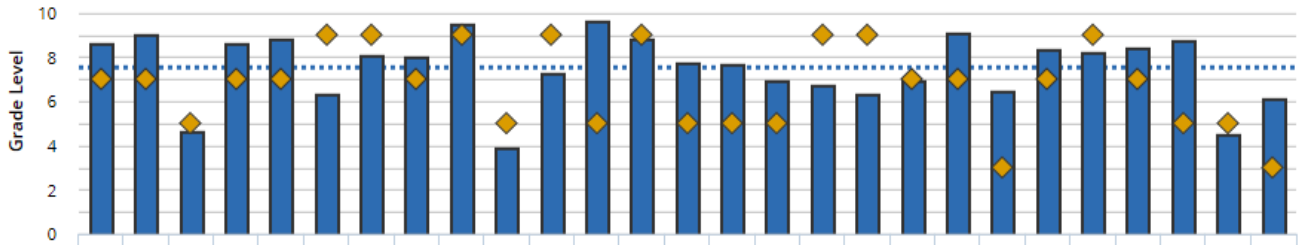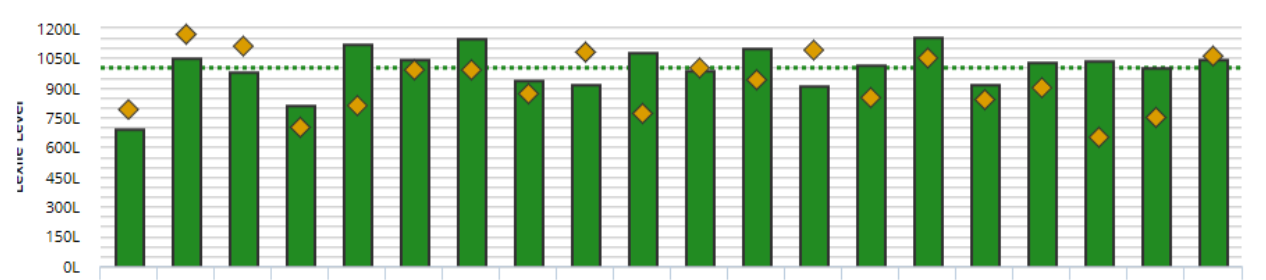

Year 9 – Grade Progression
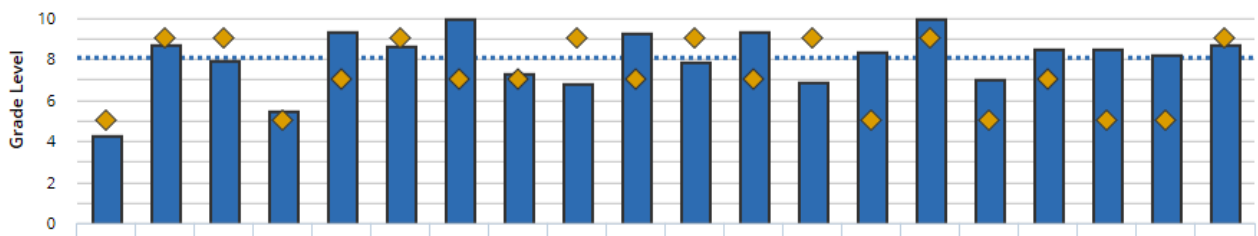
ReadTheory also shows Lexile progression for students. The Lexile Framework uses various means to match learners of all ages with resources of the appropriate level of difficulty. Lexile Framework for Reading forms much of Common Core's Appendix A. Today, Lexile measures are used in schools in all 50 states, and 20 states use Lexile measures throughout schools on their end-of-year assessments. [12]

Year 8 – Lexile Progression
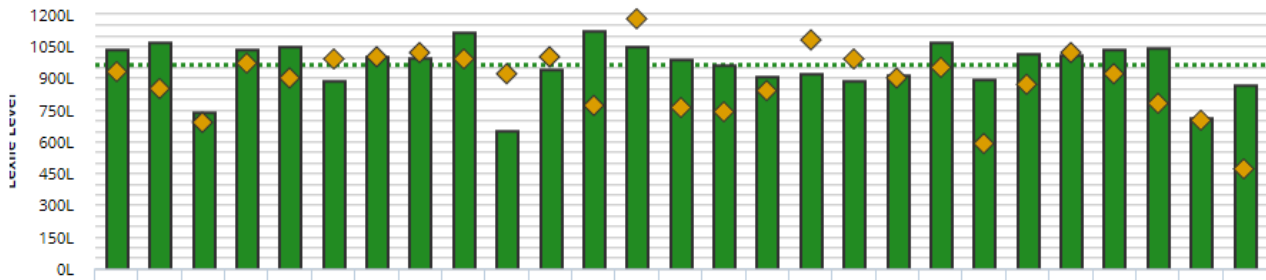
Year 9 – Lexile Progression

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[12] ReadTheory.com