

# Isaac Physics Teacher CPD

2023-05-24

# Keith Dalby

- Head of Physics (Westcliff High School for Boys) since 2013
  - Westcliff High School for Boys is a selective state school, which is coeducational in the sixth form but boys-only in years 7-11
  - ~90% Grades 9-7 for GCSE Level Physics
  - A Level cohort: 60+ Year 12, ~50 Year 13.
- Teaching physics since 2010
- A Level Physics Examiner for AQA since 2014
- Isaac Physics Ambassador since 2015(?)

# Using Isaac Physics

- At the start of the academic year, I set up each class and add class codes to the departmental spreadsheet
- During first departmental meeting of the year (during INSET day in September), I ensure colleagues are set up as joint managers in the relevant classes
- I then use mail-merge to email each student individually with instructions to join Isaac Physics and the class code
- Each student is issued with an Isaac Physics book for their level (GCSE books given to year 9 pupils, A-Level books x2 given to year 12 students)

# Schemes of Work

- Schemes of work for years 9-13 include Isaac Physics tasks for homework
- Pupils/students instructed to complete work in exercise books so working can be checked
  - Useful in case of difficulties
  - Useful to check for over-collaboration (i.e. cheating)
- Pupils/students instructed to check their answers using the Isaac Physics website and to mark their own work in the exercise books
- Feedback given by the Isaac Physics website, adheres to school feedback policy (as long as pupils/students record it)!

# Setting Isaac Physics tasks online

- All Year 12-13 tasks set by me
- Years 9-11 tasks set by colleagues
- As HoD, I have oversight to check tasks are being set according to the SoW, and to check students who are not completing them are receiving the appropriate sanctions
- Usually one Isaac Physics task per year group per week is set, except during exam seasons

# A Level Adaptive Teaching – an experiment

- This academic year, students in Years 12-13 were put into categories depending on their prior performance in Physics:
  - Alpha category – struggling to penetrate the content, requires additional support
  - Beta category – generally able to penetrate the content at A-Level, practice for mastery required
  - Gamma category – content is easily penetrable, mastery already achieved, challenging questions given to push these students further. The expectation is that these students will achieve an A-A\* grade and study Physics at university
- STUDENTS ARE MOVED BETWEEN CATEGORIES THROUGHOUT THE YEAR AS THEIR PERFORMANCE CHANGES, NOTHING IS FIXED
- Students only know the category they are in, not the other students' categories

# The categories...

- Alpha category: questions taken from Year 9 and GCSE books first, a few GCSE mathematics questions set each week too, and also some A Level mastery questions that give the students plenty of practice so they can built up to – and master – the A Level skills.
- Beta category: questions taken from “Mastering Pre-University Physics” book with a few from the “Linking Concepts” book.
- Gamma category: a few questions from the “Mastering Pre-University Physics” book, more from the “Linking Concepts” book, and a few questions from the website that are more challenging and not found in any books.

# Tracking...

- All students expected to achieve at least 75%. Below this counts as defaulting on a homework deadline (years 9-13)
- Years 12-13 homework completion compiled onto a single spreadsheet with green (pass) and red (fail/incomplete). Scores not shared, just pass or fail using colour coding
- Spreadsheet shared with years 12-13 classes each week so students who default can be identified (named and shamed – but scores not shared)



# The issues...

- One teacher drifted too far from the SoW (progressing too slowly through part of the course), so the Isaac Physics homework set was content not yet covered
- Some students became demoralised by being in Alpha. I was not able to convince them that it was a support group, they felt it was a punishment group.
- Some students in Gamma were demoralised by the additional challenge of the questions, and it was difficult to convince them that it was good for them. They felt they were being punished for being more capable!
- Movement between categories only occurred four/five times during the year, not as flexible as I wanted

# 2023-2024, the next phase of the experiment

- Students in years 12-13 will be placed in ALL categories
- Students who struggle with beta questions can work on alpha questions instead, expected to see a serious attempt at beta before seeing alpha completed
- Students who excel with beta will be expected to attempt gamma questions. Complacency and 'coasting' will be challenged
- Aspiration will be encouraged and emphasised. Isaac Physics is not a punishment!
- New boards will be made up to eliminate the questions found in all three categories (no point having the same questions in all three categories if the students are in all three categories themselves)