

# Isaac Physics use in School

Using Isaac Physics for adaptive teaching

# Overview (the before times)

- Isaac Physics homework set weekly for all students in Years 9 to 13
- Centralised tasks written into schemes of work so all students complete same tasks
- Head of Department has overview of all classes
- Data collated so conclusions can be made across whole year groups
- Isaac Physics overall performance informs school reports 'effort out of school' (a score of 1-4)
- Each week, missed submissions are recorded, which informs school reports 'deadlines' (a score of 1-4)

# Adaptive teaching

- The problem:
  - A broad range of prior performance for Year 12 students
  - Selective school, so contracted range in Years 7-11, but generous entry requirements to sixth form, so less contracted range in Years 12 and 13
  - Some students will easily attain A\*s, so SLOP with Isaac Physics “mastering pre-university” questions not necessarily a productive use of time
  - Some students will need to invest significant effort to attain a C/D, so much of the “mastering pre-university” questions out of reach
- The solution:
  - Additional scaffolding work for weaker students, and more challenging questions for stronger students

# NOT DIFFERENTIATION BY TASK!

- ALL students complete Isaac Physics work at the A Level standard
- Some *temporarily* require support for certain topics or during certain times
- Some *temporarily* would benefit from additional stretch and challenge to prepare for university
- Three categories of students: alpha, beta, gamma
  - Alpha – finds material difficult to penetrate, so requires a more gentle step up from GCSE Level
  - Beta – can penetrate the material at A Level, so needs lots of practice
  - Gamma – can penetrate far more deeply into the material, so would benefit from more challenging questions

# Regular evaluation

- Students move between groups as appropriate, they are not fixed
- Students all complete A Level questions as part of the homework
- Each evaluation cycle, students not removed from previous group so they can finish incomplete tasks

2022-2023 (2) Lower Sixth Category Alpha	×
2022-2023 (2) Lower Sixth Category Beta	×
2022-2023 (2) Lower Sixth Category Gamma	×
2022-2023 (2) Upper Sixth Category Alpha	×
2022-2023 (2) Upper Sixth Category Beta	×
2022-2023 (2) Upper Sixth Category Gamma	×
2022-2023 (3) Lower Sixth Category Alpha	×
2022-2023 (3) Lower Sixth Category Beta	×
2022-2023 (3) Lower Sixth Category Gamma	×

# Summer preparation

- All homework boards made in advance (over the Summer), for all three categories of students
- Each Monday, with a click of a link, tasks are assigned
- Each Monday, CSV files are exported, a spreadsheet automatically analyses them, and produces a grid to be shared on MS Teams for all students to see...

[illegible]

# Is it appropriate to share?

- Students do not see each others' scores
- Students do not see each others' homework category
- Completion via digital submission analogous to handing in a paper worksheet – all students can see those who do not do it
- 75% threshold for work counting as “done”, achievable by all

# Where do the questions come from?

- Category Alpha
  - Using essential GCSE Mathematics
  - Step up to GCSE Physics
  - GCSE Physics
  - Pre-University Physics
- Category Beta
  - GCSE Physics (rarely)
  - Pre-University Physics
  - Linking Concepts in Pre-University Physics
  - Some problem solving questions not found in the books
- Category Gamma
  - Pre-University Physics
  - Linking Concepts in Pre-University Physics
  - Lots of problem solving questions not found in the books



# Key points

- NOT differentiation by task: all expected to achieve the same level (i.e. be able to fluently answer A Level mastery questions)
- NOT limiting expectations of students: students regularly change categories (based on homework performance and test scores)
- SCAFFOLDING REMOVED OVER TIME: No requirement for *ANY* students to be Category Alpha if it is not needed. Currently 3/54 students in Category Alpha
- DECREASES WORKLOAD: Planning already done, spreadsheets already made
- ENCOURAGES ROUTINES: One task per week, so little reason for it to be forgotten