2016 cohort

# Alice Len – Physics Teacher

**What strategies can be used to improve A-level Biology language confidence and mastery?**

The mastery of biological language becomes significantly more difficult as many keywords for concepts being taught at A-level are complicated (most are in Latin) and therefore difficult to remember and possibly also to define. The A-level Biology curriculum introduces more and builds on the concepts taught at GCSE level providing a greater depth of biology information. This coincides with a significant increase in the prescription and learning of biological names that are often not easy to remember and are difficult to define and explain. The combination of these two issues can lead to subject disengagement and subject misconception.

**Aims of the Project:**

1. To improve biological language mastery

2. To improve confidence with exam question approach/understanding and answering using the right biological and scientific language

**Strategies/Intervention:**

1. Peer to peer (P2P) mentoring (Year 13s teaching Year 12s) with a focus on keywords for biological concepts taught. This strategy has been demonstrated to have moderate to high effectiveness and positive impact on learning, with an average positive effect equivalent to approximately five additional months progress (https://educationendowmentfoundation.org.uk/evidence-summaries/teaching-learning-toolkit/peer-tutoring/).

2. Hold a 'Biology Olympiad' with an element to also boost oracy skills along with increasing biological language confidence by using 'game show' style quizzing (recall of keywords and definitions), debate (oracy) and practical report writing (use of biological keywords to describe processes, results and discussion of results). This will also help the students to see it as a fun and stimulating exercise to help them learn and engage.

**Research Methods**

1. One to one (or two) tutoring yr 13 to yr 12 pupils, mentoring for debates and being an A-level science ambassador.

2. All to attend biology club tutorial session (coach yr13s on providing optimal sessions) and have an optional second session once a week. This will run for 12 weeks (2 terms)

3. Survey on effectiveness, confidence in tutoring and subject knowledge given before and after the program to both year 13s and 12s.

4. Baseline, midway through tutoring and post-tutoring mock exam for year 13s

5. Yr 12s will partake in an A-level Olympiad once a full term

**Findings**

Survey results to the following statements and on a scale of strongly agree (1) to strongly disagree (7)-;
S1: I have good time management and study skills
S2: I like participating in student group/team work
S3: I believe I have strong leadership skills
S4: I have good communication & interpersonal skills
S5: I am confident with my A-level Biology Knowledge
S6: I can explain A-level Biology concepts clearly and concisely to peers
S7: I am confident with explaining A-level Biology concepts to fellow pupils
S8: I believe that I can answer A-level Biology exam questions precisely using keywords correctly
S9: I believe I have good evaluation skills on debatable topics in A-level Biology

| QUESTION | WEIGHTED AVERAGE - BEFORE | WEIGHTED AVERAGE - AFTER | Difference |
|---|---|---|---|
| 1 | 3.78 | 5.25 | 1.47 |
| 2 | 3.78 | 4.88 | 1.1 |
| 3 | 3.78 | 5 | 1.22 |
| 4 | 3.33 | 5.5 | 2.17 |
| 5 | 2.33 | 4.75 | 2.42 |
| 6 | 2.33 | 4.38 | 2.05 |
| 7 | 2.56 | 4.5 | 1.94 |
| 8 | 2.44 | 4.88 | 2.44 |
| 9 | 2.33 | 5 | 2.67 |

On average there was a 1.94 increase in points for all statements indicating there was a marked improvement in all the above areas.

**Conclusions and recommendations**

- **Improved keyword recall and definition** → Increasing the chances of mark gain in exams
- **Improved engagement in A-level Biology** → Reducing fear and improving confidence with the subject
- **Improved conceptual understanding** → Improve long term knowledge of the subject
- **Improved organisation (preparation for lessons and revision**)→ The completion of more home tasks led to more consolidation of subject material and exam practice
- **Improved ability to convey concepts to peers using different methods**→ Led to improving consolidation of subject material

All of this has led to, in particular for the students who were very proactive,;
- Increased independent learning
- Improved mastery of A-level Biology language and content
- Improved exam preparation and resilience