DEVELOPING FLEXIBLE APPROACHES TO PROBLEM-SOLVING THROUGH ROLE-PLAY WITH UPPER SIXTH BOYS

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"It's quite meaningful to do the interview as an interviewer as you can understand what the interviewer is looking for during the process."

Introduction

Whilst teaching at an academically selective all-boys school in Britain, I am often teaching young men who throughout their school careers have matured into fantastic physicists. Many of these then go on to apply for STEM courses at university. During the interviews for these courses, they will be given a mathematical or physics problem and they will have to solve it *live* for the interviewer, talking through their reasoning and how they reach the answer. Many of our boys who are able to perform exceptionally in examinations, find it terribly difficult to translate this into an interview context of questioning and answering.

I hoped to improve the adaptability of my students to enable them to be more flexible in how they answer questions in novel scenarios, rather than solving the conventional examination style. I hoped that my action would enable them to access live problem-solving skills and perform under interview pressure. The boys needed to be able to adapt their academic prowess and ability in exams into an interview environment.

Research Question: How might role-play within physics lessons develop a more flexible approach to problem-solving in Sixth Form boys?

Research Context and Participants

Dulwich College was established by Edward Alleyn, a contemporary and peer of Shakespeare, in 1619, for boys in South London. It sits in the affluent area of Dulwich which is also bordered by council properties and poorer neighbourhoods. It is now widely considered to have one of the most diverse school attendance of any private school in Britain.

The participants for this action research project were ten boys of a Sixth Form group. Aged 17 and 18 years, they were particularly appropriate as nine of the ten were applying for Oxford or Cambridge University and I hoped to enhance their chances of success as much as possible.

The Research Action

Once a week, lessons included verbal answering. Students first described a physics process to a partner using notes and the partner gave feedback on the clarity of the description or helped them produce their answer if support was needed.

The second stage involved incorporating university interview role-plays into my lessons. I began by modelling some aspects of a good interview. After this introduction, the boys were put into pairs to do their own role-play, with one student being the interviewer and the other interviewee. The interviewer chose a question from a list of known interview questions (solutions are available to the interviewer) and the interviewees answered the question verbally, talking through their thought process and reasoning. The interviewees were allowed to ask for help or concede that they could not finish it, at which point the interviewer would try to give prompts. To finish, the interviewer gave feedback, primarily about the clarity of the answer, and how easy it was to follow the answer. Secondarily, the feedback was to be on whether the answer was correct; for this activity, I saw this as less of an important outcome.
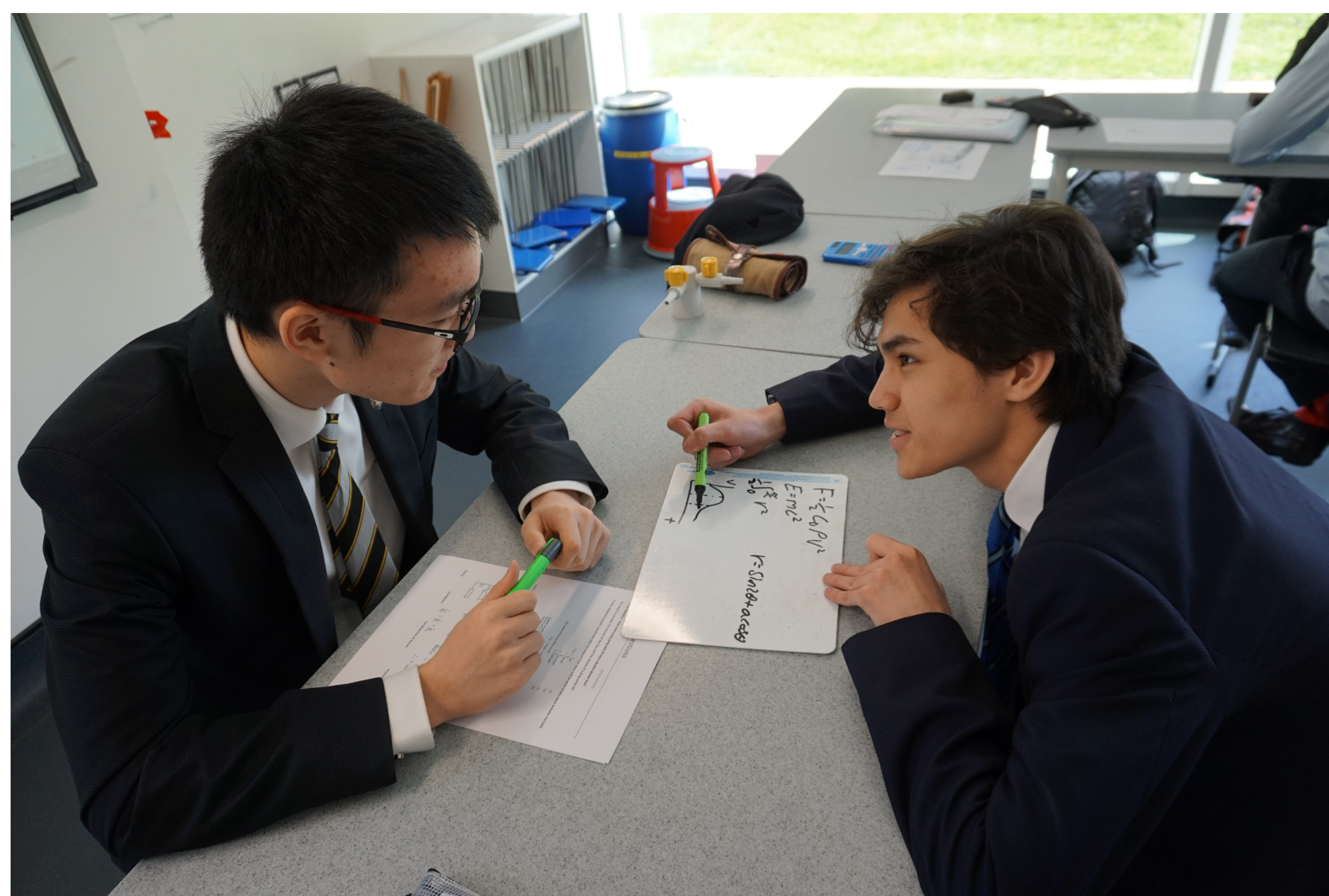
"The best part of the activities was allowing me to become more confident in talking about physics."

Data Collection

- **Entrance and Exit Questionnaires** for boys to record on scales their emotions surrounding the interview process and also qualitative descriptions of their anxieties and awareness of the process before and after the action.
- **Record of the quantitative data scores** boys awarded one another whilst conducting the interviews.
- **Recorded videos of the role-plays** and qualitative notes on the quality of the feedback given by the interviewer and confidence of the interviewee.
- **Regular conversations** with the boys to garner their interpretation of the action.

Method of Analysis

- The written and recorded statements before and after the action were analysed **for themes within the boys' attitudes and feelings.**
- The quantitative data scores collected were used to identify **trends in their scores**.

Key Findings and Discussion

- Boys **began the process very confident in their own ability, but nervous about the unknowns** of the interview. One boy said, *"I am very passionate at what I'm talking about, if I know the topic. I can often go down the wrong path or think with the wrong things in mind when answering questions."*
- **Following the action, the boys rated their own abilities lower, but their confidence and preparation higher**. This is evidence of how much the activities had enabled them to truly appreciate their own ability and of where their focus for self-preparation should lie.
- **Boys developed a richer understanding of what constituted a successful interview.** As their feedback developed from the rudimentary, *"Yeah, that was great,"* to the far more advanced, *"despite you getting the right answer you didn't include me in your thought process."*
- All boys spoke of the value of watching peers complete interviews: *"The best part was seeing how enthusiastic Will was talking about mathematics. I would never have spoken like that in an interview."*

Conclusions

- The repetitive nature of the activities were very good at enabling the boys to rehearse their behaviour and gave them confidence that they had past experience of what was to come. After the action, one boy who originally described himself as, *"Careful and Eager,"* changed to *"Prepared and Experienced."* The students were better equipped to adapt their academic understanding to novel scenarios.
- **The most powerful experience for them was observing best practice within peers and how they could adapt this into their own. This also allowed them to witness and appreciate bad practices and help others to work through and around this.**

Key Readings

Cahill, H. & Coffrey J. (2013, November). Learning Partnerships: Re-figuring the possibility of communication between young people and their doctors and teachers. University of Melbourne. https://tasa.org.au/wp-content/uploads/2013/11/Cahill.pdf

Smit, M. (Presenter). (2008, November). *Talk for learning*. Speech presented at NaPTEC, North Yorkshire, UK. https://www.naptec.org.uk/s/Mike-Smit.pdf

Torrance, E. P. (1972). *Teaching for creativity*. University of Georgia. http://cpsb.com/cru/research/articles/TeachingforCreaTorrance.pdf

"The activities gave me an opportunity to rehearse how I was going to approach the questions, and gave me a chance to do this over and over again."

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