A Survey of Facilities in UK 'A-Level' Education

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Abstract

In order to develop apparatus for use in 'A-Level' education, our team placed a survey online to gauge what equipment and what budgets were available to secondary schools and sixth form colleges in the UK. Although the survey was specifically catered for our investigation the results may prove useful for others. We received 36 responses in total.

1 Introduction

As part of project to develop an affordable particle detector for use in 'A-Level' education, we needed to gauge a budget as well as what facilities were already available to secondary schools and sixth form colleges. The survey also included some questions that were pertinent to our project in particular which are included for completeness.

In total 36 physics teachers and lab technicians responded, one Canadian teacher's response was not included in the final analysis.

2 Method

We placed the survey online in Autumn 2004 and invited people involved in A-Level physics education to complete it in their own time. Posts were placed on the Times Educational Supplement website[1] and emails sent out to the IOP Physics Teachers News and Comments[2] mailing list and a mailing list of local physics teachers compiled by the Bristol University Physics Department. The last response was logged in early December 2004.

[1] TES – http://www.tes.co.uk/

[2] PTNC – http://networks.iop.org/archives/ptnc.html/

The questions were largely yes/no responses although space was allowed for people to expand upon their answer in order to get a better picture of their meaning. This meant however that some results had to be interpreted. Some of the yes/no responses were conditional, in these cases the response was marked 'maybe' and details of the conditions are summarised in the results.

As agreed, no specific information is given on particular schools or people.

Below is a transcript of the questionnaire webpage.

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Questionnaire for schools teaching particle physics

I am an undergraduate at Bristol University developing an affordable
particle detector for schools. This questionnaire will hopefully give a
better insight into what schools want from a project such as ours.

Specific information collected will not be passed on to commercial
parties, it is purely for our own research.

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Q1.Would you consider purchasing apparatus for the detection of cosmic
rays at a low enough price?

Q2. What would be the maximum you would be willing to spend on such a
piece of apparatus?

Q3. Would you use the equipment primarily for investigation or
demonstration purposes?

Q4.Would your establishment consider collborating with others in the
area to form a 'super detector' similar to the NALTA n the USA?

Q5. It would be a great help if we knew what equipment is already
available to your establishment. Out of the following, which does your
establishment have access to?

    dry ice
    liquid nitrogen
    local source of radiation (i.e. radioactive samples)
    high voltage supply. (Please specify max voltage)
    oscilloscope.  (Please specify: digital, analogue, both)
    a gas trained technician
    laboratory PC
    video camera. (Please specify: digital, analogue, both)
    photographic darkroom
    fume cupboard
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Q6. Any further comments or clarifications?

Finally could you enter your name, the name of your establishment and
the level of education which you teach there.

Name:
Establishment:
Level of education (i.e. GCSE, A-Level etc.):
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3 Results

Thirty six people responded although one was a teacher from Canada. Since differences in the education system and funding could affect results from the UK we did not include this result in the following analysis.

Figure **??** shows how much money schools and colleges have to spend on laboratory equipment.

Figure **??** shows what percentage of schools have access to various facilities. We also discovered that 8% would wish to use a new piece of laboratory apparatus primarily for investigation purposes, 47% said they would primarily use it for demonstration purposes and 44% said it would have to fill both roles.

Particular to our project, we discovered that a maximum of 92% of schools would be interested in a collaborative array project similar to NALTA[3] with a minimum of 58%, the large margin of difference made of 'maybes' who would almost all participate provided that it required little or no maintenance by anyone at the school.

Further comments included one response which expressed that if any software was available it should be compatible with Apple computers, another which said that any apparatus would need to be easy enough for a non-physics teacher to operate and three responses which explicitly expressed that the laboratory equipment would need to be 'entertaining'.

4 Analysis and Conclusion

In reference to the facilities available to schools, there was some confusion as to what was meant by 'Gas trained technician', we should have specified that this meant the school was able to safely and legally use bottled cylinders of gas, for example CO_2 or Propane. As a consequence we believe the actual

[3] NALTA – http://xxxxx/

percentage of schools who can use such gases is higher than implied by these results.

5 Acknowledgements

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