

Nuffield Bursary Report

Notes

The report has to contain the essence of what you did and why you did it. It is useful to have a summary at the front of the report. This can be a personal statement and/or an abstract.

A personal statement from last year reads

Being a student who wants to study science at university and eventually lead into a career, I think the Nuffield Science Bursary was the best experience I could have had. It gave me an opportunity to apply my scientific knowledge, and learn more about certain areas in science.

The project in the XXXXXXXX at the XXXXXXXX was interesting, as I got to see how things have changed over the past year, and try to link it in with scientific principles.

I found it helpful working with a student of the same age. It was beneficial to be able to talk to someone in the same position about the work being undertaken and share our thoughts on it.

I also thought the meetings with XXXXXXXX and other Nuffield students were useful to find out what they were doing and how they were getting on. However I think everyone would have benefited from meeting more often.

Although some of the work was tedious due to its repetitive nature, overall I found the study improved certain skills like communication and being able to work as a team.

The abstract for the same project reads

This study is the third part of an ongoing project of the three ponds in the XXXXXXXX. The garden has one peat pond, at a higher level to the two other. There is a chalk pond and the main pond, which is about the same size of the other two. There is a small waterfall forming a ford at the bottom of the peat pond feeding the main pond. There is a bed of rocks over which water may pass between the chalk and main ponds. The water level needs to be high enough to enable this to happen. The fauna of the ponds was sampled to see if there was a significant difference between the three ponds. We will also analyse the water from each pond, and look at the flora to see if these influence the fauna. The ponds are fed from different sources so the water chemistry should differ, as should the flora and ultimately the fauna.

Another abstract reads...

Ten materials were studied; five rutile structured fluorides and five rutile structured oxides. Experimental lattice parameters were compared to calculated lattice parameters. Calculations were done using an energy minimisation code, CASCADE, and using a perfect packing approach. Neither was able to reproduce the experimental results accurately. The energy minimisation method gave oxide materials as being less accurate than fluorides. This is believed to be due to the non-optimisation of the oxide potentials used for the rutile structure.

Defect enthalpies were simulated for each material, and from that, defect reaction enthalpies were calculated. Fluorides were found to have lower intrinsic defect reaction enthalpies, while all materials were predicted to be Aion Frenkel dominated.

The way to approach it is:-

- **Introduction**

What did I set out to do. What was I being asked to do. What information (research paper/articles) was already known about the subject. Did I have to read up about the subject and where did I find the information.

- How did I go about finding information. (It can be a case of being shown what to do and getting on with it)

- **Methodology**

What sort of apparatus/equipment/techniques did I have to use and in doing so what safety precautions and special measures did I need to take and why? Photos of you working can be useful. Buy a disposable camera and take it in one day. Ask permission to do so.

- **Results and discussion**

What results did I get – You can include some/all data collection and results in your write up.

- **Conclusions**

What conclusions did you reach. Was there anything unexpected, exciting about your findings etc.

- **Evaluation**

If the work was to continue, what needs to be done and is there anything further anyone should look at/pursue. Should anything be done differently from the way you did it.

- **An appendix** which can contain any additional information the reader might find interesting, etc

- **References** may need to be inserted.

- **A Bibliography** is useful.

- **Acknowledgements**

You may wish to say thanks to those that helped you carry out the bursary. Did you consider the experience/bursary to be worthwhile. Has it changed your view of how scientists work? Has it confirmed the fact you want to pursue a career in science or scientific research.

Guidance notes for writing Gold CREST Reports in conjunction with the Nuffield Bursary scheme

Most Companies and Research Institutes have specific ways to write up research. They may ask you to follow their style or they may leave it up to you. Discuss the content and layout of your report, in its early stages, with your supervisor. Ask for any guidance that is provided to employees. This should give you the headings and sections they would expect to see.

All projects are different, but you must ensure that your report is orderly, complete and easily readable by your supervisor and by CREST award assessors. The assessors will be scientists or engineers but not necessarily experts in your area of research. They will have to read a large number of reports and need to understand yours within about 15 minutes. The general notes below should help you write a good report whether you follow a company format or not.

General suggestions:

- Have a title page with your name, school, a simple project title and link company.
- Have a simple paragraph at the start, called an 'executive summary' of your project covering what you did and what you found.
- Include an index.
- Keep the main report to 10 to 20 pages.
- Use an appendix for reference data, tables, spectra etc to keep the text clear.
- Check for and avoid jargon & repetition

Make sure you include:

- What the project was about and how you approached it
- what you planned to do and why
- what you did
- what problems you encountered
- how you overcame problems (this displays Creativity, an essential for CREST)

You could explain:

- technical terms and abbreviations, perhaps in a glossary
- any commercial relevance of the project (if it is not confidential)
- your recommendations for further work that could be undertaken or is needed
- the work that you did and the help received from others

You might also include:

- sample calculations
- summary tables and diagrams
- test methods
- photos or anything which helps clarity

End with:

- an evaluation of your success in meeting the project objectives
- a conclusion with a clear statement of findings or results
- a thank you to those that have facilitated or helped with your work
- information sources and any standard research methods