

Group 4 Project:

IB Sciences 2011-2012

Name: _____

Overview:

All IB science students must complete a Group 4 Project as part of the required IB Group 4 (Science) practical program. The following elements are expected:

- Interdisciplinary collaboration
- Appreciation of the implications of science and the limitations of scientific study
- Development of teamwork
- Development of planning skills
- Exchange or sharing of both data collected at issues raised
- Approximately 10 hours of involvement time

In this project you are part of a multidisciplinary team studying a particular science topic within the same theme. Your team will consist of 4-8 students, with a mixture of science disciplines represented. There is a strong emphasis on team work, sharing of ideas, and cooperation (internal assessment Personal Skills).

Your whole team must meet at least two times. At the first meeting, you will discuss and decide on a topic that you wish to investigate. After your team has chosen a topic, members of each science discipline within the team will decide on their own investigation – i.e. the chemists will work on a chemistry investigation and the physicists on a physics investigation. Your team will then meet again during the Group 4 Project Symposium. During the symposium you will need to view the results of each other's projects and make collective interpretations and conclusions about how the experiments relate to each other. It is highly recommended that you meet or communicate with your team fairly regularly.

Group Members:

You will be assigned an interdisciplinary group comprised of a team of physicists and/or chemists and/or biologists. When you meet your group members, get their contact information (email and/or phone number) because you will need to work together as an interdisciplinary team in order to prepare some aspects of your Group 4 project.

Name: _____ Contact Info: _____ Discipline: _____

Name: _____ Contact Info: _____ Discipline: _____

Name: _____ Contact Info: _____ Discipline: _____

Name: _____ Contact Info: _____ Discipline: _____

Name: _____ Contact Info: _____ Discipline: _____

Name: _____ Contact Info: _____ Discipline: _____

Final Product Expectations and Due Dates:

| DATE | EVENT |
|------------------|---|
| 27 January 2012 | Pick IB science subject. Students enrolled in multiple IB science classes choose one in which to complete the Group 4 Project. All IB Biology 2 students will complete a biology experiment. Students may choose between IB Chemistry I and IB Physics I if they are enrolled in both of those courses. |
| 27 January 2012 | Request discipline partners (someone who is going to be doing their Group 4 Project in the same discipline as you). You may work within a group of either 2 or 3 scientists. |
| 1 February 2012 | <p>Interdisciplinary Initial Group Meeting—8:30-9:30 AM in the <u>Lyceum Theater</u> All group planning meeting at 8:30 am in which you will:</p> <ul style="list-style-type: none"> ○ Meet your assigned interdisciplinary groups (includes students from chemistry, physics, and biology). ○ Exchange contact information (phone numbers / email addresses) ○ Brainstorm and discuss your theme ideas, share ideas and information, list possible experiments that could be completed in each discipline pertaining to the themes ○ Collaboratively choose a final theme that your group will all agree to study. <p>Your interdisciplinary team will design and perform experiments that are all related to each other. Each discipline will perform a completely separate, yet related experiment. The results of your experiment must eventually be related to the results found by the other disciplines.</p> <p>DUE: A brief description (1 paragraph) of the topic your interdisciplinary group has chosen. Suggest three potential experiments that could be done by each discipline related to the sub-topic (see page 4). Due before you leave this meeting!</p> |
| 10 February 2012 | <p>DUE: project proposal due to your teacher. The project proposal must contain the following elements:</p> <ul style="list-style-type: none"> ▪ Collaborative introductory paper; a one page (or so) introduction to your topic. Include a description of the theme and scope of your interdisciplinary project. This must include a discussion your problem statements and a proposal as to how the results from different disciplines could be related. This must be a <u>common write up for the entire interdisciplinary group</u>. Each group will turn in ONE copy of the paper to www.turnitin.com. This paper will be due by 11:59:59 on 2/10/12. <p>NOTE: The person who submits this paper must register for a new class on turnitin</p> <p><u>Class Name:</u> SHS Group 4 Project 2012 <u>Enrollment password:</u> G4P2012 <u>Class ID #:</u> 4716375</p> <p>When you turn in this paper, please put a title and your Group # on the top of the page.</p> |

| DATE | EVENT |
|---|---|
| | <ul style="list-style-type: none"> ▪ Experimental design template: you and your biology partner(s) will complete the Group 4 experiment design template provided in class |
| 16 February 2012 | Design lab feasibility feedback (nothing due for you...this is from your instructor) |
| 16 February 2012 | <ul style="list-style-type: none"> ○ Performing your experiments, paying attention to safety, ethical, environmental considerations. ○ Must be done outside of school time. If you choose to use school equipment (at school only!), you must make advance arrangements with your teacher. ○ Collaboration between the discipline areas may or may not be necessary. This depends on how closely you, as a group, decide to rely on other discipline's results for completing your project. |
| <p><i>At some random point during the week of</i></p> <p>Feb. 28 2012</p> | <p>DUE: Timesheet spot-check</p> <p>As you complete your experiment, create a record log of all activities related to your experiment each day that you work on the project. It is expected that you will spend 10-15 hours collecting data, recording observations and completing multiple trials. These 10-15 hours must be documented (date, time, thorough description of what was done) and must only be the time you spent doing the experiment (not writing up the report or performing analysis). See page 5.</p> |
| 9 March 2012 | <p>DUE: Experimental draft project due to teacher.</p> <p>A complete rough draft of your experiment design and results. <u>You and your discipline partner</u> will work together to create one draft. This can be an outline of your Power Point slides, showing what you plan to display and in what order, OR it can be a rough draft sketch of a tri-fold poster display. See the "Example of a Scientific Poster" for standard layout guidelines on pages 6-7.</p> |
| 14 March 2012 | <p>Group 4 Project Symposium (poster presentations) THIS IS A MANDATORY <u>EVENING</u> EVENT! Times TBA <u>You and your discipline partner</u> will attend the IB Group 4 Symposium (Poster presentation) to share your completed presentation and manipulative props with teachers, parents, teachers, past IB science students and the press.</p> <p>Your presentation may be either a <u>tri-fold poster</u> OR a <u>Power Point presentation</u>. The quality of the posters and scientific validity of the research will be evaluated at this time. You will be presenting your work in a presentation lasting no more than 5 minutes.</p> <p>During the symposium your presentation will be scored according to the rubric on page 8. You will also need to view the results of each other's projects related to your topic and make collective interpretations and conclusions about how the experiments relate to each other. See page 9.</p> |
| 21 March 2012 | <p>DUE:</p> <ul style="list-style-type: none"> ▪ Completed time record log due to teacher ▪ Team evaluations due: a peer score of members of your team. You will evaluate members of your team on participation, cooperativeness, and contribution of ideas. See page 10. |

Group 4 Project: Initial Group Planning Form

Group number _____

To be completed at the **Interdisciplinary Initial Group Meeting** (Feb 1, 2012)

Group Members Names/Subject

| | |
|---------------|---------------|
| _____ / _____ | _____ / _____ |
| _____ / _____ | _____ / _____ |
| _____ / _____ | _____ / _____ |

Description (1 paragraph) of the topic your interdisciplinary group has chosen:

Three potential experiments that could be done by each discipline related to the topic.

Discipline: _____

- Potential experiment #1:

- Potential experiment #2:

- Potential experiment #3:

Discipline: _____

- Potential experiment #1:

- Potential experiment #2:

- Potential experiment #3:

Discipline: _____

- Potential experiment #1:

- Potential experiment #2:

- Potential experiment #3:

Scientific Posters

Scientists present their work at seminars or conferences. Unfortunately, not everyone can speak at a conference so many scientists present their work on posters which are exhibited during the conference. It is very important that these posters catch the eye and hold the attention of the other conference participants.

Guidelines for producing a poster

Size

This will be determined by the exhibition area but the optimum size will be about 100cm x 70cm.

Contrast

- Choose a background support which provides a good contrast to your work.
- Leave enough room to provide a space around your diagrams, blocks of text etc, it attracts people's attention.
- Mount the documents on the poster using double-sided tape or photograph attachments. Set it out on the ground first to see how you want to arrange the different parts.

The Title

- Use a very large font
- The title should be carefully chosen to attract an audience, so know your audience well.
- State what the poster shows using key words.

The Team

Indicate the members of your team - the standard convention is to put them in alphabetical order.

Text

Type it on a word processor, using a large font (at least 14 or 16 points).

Introduction

Be brief, be concise.

Aims and Conclusions

Summarize them as 3 to 5 point sentences.

Results

- Use full sheets (30cm x 20cm) for each graph/diagram.
- Remember you can use vertical ("portrait") or horizontal ("landscape") formats.
- Tables of results are not easy to read and interpret. Data is best presented in graphical form.
- The data should follow a logical progression across the poster. Use numbers or arrows to guide the reader.
- Give each data table and graph a concise title and a block of text.
- Think about using photographs. They add color and they will create a great visual impact.

Attendants

- Establish a system for the members of the team to present the poster and to talk about your work. It is a good idea to rehearse beforehand.
- This will also provide an opportunity to present objects, equipment or materials which cannot be stuck on the poster.
- You may even stick a picture of your group on the poster. This way you will be recognized amongst the crowd.

SCIENTIFIC POSTERS

Remember to organise a rota.
Rehearse your presentation.

3 to 5 short statements

Big font. Be concise.
Use key words.
Know your audience

TITLE

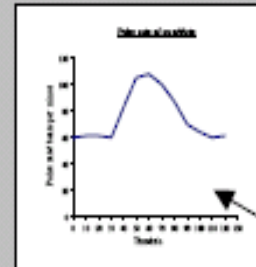
Team of authors

INTRODUCTION

.....
.....
.....
.....
.....

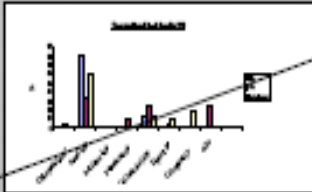
Aims :

- 1.....
- 2.....
- 3.....
- 4.....



Photos add impact.
Select them carefully.
Enlarge to 15x20cm

Results :



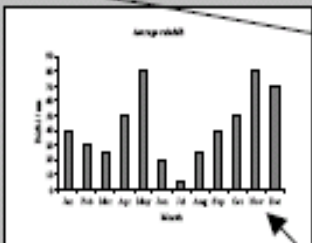
- 1.....
-
-

4.....
.....

5.....
.....

Graphs, histograms etc. can easily be drawn on a spread sheet. Give each one a title

Number data or use arrows to lead the reader on



- 2.....
-
-



3.....
.....
.....

Conclusions :

- 1.....
- 2.....
- 3.....

3 to 5 concise statements

Further developments

Diagram and explanatory text

Suggest modifications.
Time and materials may not permit you to finish

IB Science Group 4 Project Poster Evaluation Rubric

Student Name:

| Category | Scoring Criteria | Points | Student Evaluation | Teacher Evaluation |
|--------------------|--|--------|--------------------|--------------------|
| Organization | Poster is organized in vertical columns. <i>(Sufficient space between columns leaves no doubt about where one column ends and another begins.)</i> | 1 | | |
| | Sequence of the presentation is easy to follow using visual clues provided. <i>(Clues may include numbers, letters or arrows.)</i> | 2 | | |
| | Text is simple and large enough to be read from a minimum of four feet away. <i>(A standard, easy to read text is used. Both capital and small-case letters are used.)</i> | 2 | | |
| Presentation | Graphics dominate the poster visually with text playing a support role. <i>(Use graphics, cartoons, and figures when possible.)</i> | 2 | | |
| | Relative importance of poster elements is graphically communicated. <i>(More important information is presented with larger graphics or text.)</i> | 2 | | |
| | Color is used to emphasize or link words and images. <i>(Color changes serve a purpose.)</i> | 2 | | |
| | Artistic elements of the poster are subtle and do not distract from the message of the poster. <i>(Scientific posters present information clearly.)</i> | 2 | | |
| Report of Research | Introduction explains how interdisciplinary experiments relate to each other and the hypothesis of the performed experiment. A list of the relevant variables is provided. | 3 | | |
| | Materials and experimental methods are explained, including drawings or pictures. | 3 | | |
| | Data is analyzed and presented clearly, using well labeled tables and graphs as necessary. | 3 | | |
| | An accurate conclusion is drawn, and includes a description of how the conclusion relates to the results from other experiments in the interdisciplinary group. | 3 | | |
| | Details indicate the topic was sufficiently researched and quality information is presented | 3 | | |
| Visual Aid | Along with the poster there is an interactive visual aid or display of the materials and/or results used in the experiment. | 2 | | |
| Score | Total Lab Points | 30 | | |

Group 4 Project Symposium

Group: _____

Group Topic:

For each of the projects related to the collaborative topic, please answer the following questions:

Discipline: _____

What did they test?

How did they test it?

What were the results?

Discipline: _____

What did they test?

How did they test it?

What were the results?

Discipline: _____

What did they test?

How did they test it?

What were the results?

How do the results of ALL the science projects under the same theme relate to each other?

IB Science Group 4 Project: Peer and Self Assessment

Your Name: _____

THERE IS NO NEED TO CONSULT OTHER GROUP MEMBERS ON THE COMPLETION OF THIS FORM.

| | |
|---|--------------------------|
| 3 | Outstanding contribution |
| 2 | Significant contribution |
| 1 | Little contribution |
| 0 | No contribution |

Use the following categories to assess the level of contribution of each of your colleagues and yourself whilst undertaking this project.

| <i>Assessment Categories</i> | Student's Names | | | |
|---|------------------------|--|--|--|
| | <i>Self</i> | | | |
| Was he/she regularly at group meetings, punctual and cooperative? | | | | |
| Did he/she contribute ideas and suggestions for the project? | | | | |
| Did he/she accept a fair share of the work? | | | | |
| How would you rate his/her overall contribution to the project? | | | | |
| How much did he/she contribute towards the preparation of the write up? | | | | |
| Total for each student | | | | |

IB BIO