



**Baccalaureate Interdisciplinary Project**

**Science - Exemplar 2**

**Grade: B**

**“The impact of pandemics; past, present and future”**

## Science: Interdisciplinary Project

### Proposal

<b>Candidate name</b>	
<b>SCN</b>	
<b>Centre name</b>	
<b>Assessor name</b>	
<b>Project title</b>	The impact of pandemics; past, present and future.

#### Project outline (what it is I want to do and how will I go about it)

This investigation will examine the causes of pandemic outbreaks and how they affect human society and civilisation. In particular, the investigation will attempt to analyse what effect these pandemics have had on public knowledge and understanding and what measures have been taken or should be taken to either prevent, or reduce the impact of future pandemics.

I would like to carry out an investigation into public knowledge and understanding of pandemics and what concerns they have, if indeed they have any. This would be done by surveys. The World Health Organisation (W.H.O.) also has a lot of accessible statistics on recent pandemics and allows comparisons between different country's ability to tackle a pathogenic outbreak.

I also hope to develop a contact with a virology expert at Glasgow University. He is composing a new website to aid public understanding of viruses. My contribution will involve generating questions for a questionnaire which will appear on the website and can be answered by members of the public. This will allow public opinion to be understood as well as informing the public with correct information. The website will allow the public to understand medical diagnoses and reduce misinformation circulating about common medical issues such as swine flu and the HPV vaccinations. This, in the spirit of the baccalaureate, provides a useful resource to society.

I also hope to make some case studies of time periods and how they have impacted people's views of viruses and perhaps look at genetic heritage. The case studies will include:

- The effect of the "Black Death" which devastated Europe in the 14<sup>th</sup> century and how that has affected the genetic make-up of the survivors' descendants.
- The impact of modern pathogens that are currently widespread and seemingly untreatable e.g. HIV, H1N1 and H5N1. An analysis of how pandemics have become more common place in recent times will also be considered
- The rather nebulous future that could hide myriad new diseases will also be reflected upon and I will investigate how a disease might be suppressed before it becomes a threatening pandemic. The potential threat of bioterrorism will also be taken into account.

**Reasons for choosing this project (e.g. personal interest, future plans, links to other subjects I am studying/ have studied)**

I have chosen this project because I am studying Advanced Higher Biology, Chemistry and Mathematics and can combine them in the context of this study. I also intend to study Biochemistry next year at university and hope to find this study a useful insight into independent investigation. This project will also improve my research and communication skills.

This topic is becoming increasingly important in a world being made progressively smaller by constantly improving aeronautical transportation and burgeoning populations. With the potential threat that contagious pathogens pose to modern society, a good understanding of how they spread and how to prevent this is essential.

**The broad contexts this project will cover are**

- Citizenship                       Enterprise                       Employability  
 Economic development                       Sustainable development

**Learning environments I will access are:**

- University library
- Virology professor
- A pharmacy
- The World Wide Web

**The skills I will develop and/or improve in the course of this project are**

**Application of subject knowledge and understanding** – I am going to apply knowledge of Biology, Chemistry and Mathematics (all at AH level).

**Research skills – analysis and evaluation** – I will develop my analytical and evaluative skills by selecting appropriate materials from the information that I gather and by drawing conclusions that will help me make progress in my project.

**Interpersonal skills – negotiation and collaboration** – I will develop my negotiation skills through discussion with a variety of people (this will include negotiation skills through discussion with a variety of people (this will include people within my own school and also people in external organisations) that I will need to interact with in order to carry out my project.

**Planning: time, resource and information management** – I will make use of a mind map and develop a Gantt chart which will help me to develop my planning skills.

**Independent learning – autonomy and challenge in own learning** – I am going to take charge of my own learning as far as possible. I am going to try not to rely on my teacher for guidance.

**Problem solving – critical thinking: logical and creative approaches** - I will develop my problem solving skills as I work through my project. I will need to have contingency plans in case the original has to be changed.

**Presentation skills** – I will develop my presentation skills by giving a presentation to the rest of the Baccalaureate candidates. I will also need good presentation skills when I discuss/negotiate with my teacher and those people I have to speak to out with school.

**Self evaluation – recognition of own skills development and future areas for development – As I go through my project I will continually reflect on all the above skills.**

**Assessor comments**

*See attached*

<b>Proposal approved</b>		<b>Further work required</b>	
<b>Candidate signature</b>		<b>Date</b>	<i>15/10/09</i>
<b>Assessor signature</b>		<b>Date</b>	<i>15.10.09</i>

## Science Baccalaureate: Project Proposal

**Name:** \_\_\_\_\_

<b>Grade C Criteria</b>	<b>Y/N</b>	<b>Comments</b>
Clear aims and reasoned arguments to support the relevance and practicability of the project	Y	You have researched your proposal in detail and have developed your thoughts about what you want to research. Your project is relevant to current health issues and you seem to have developed a good range of methods in order to tackle it.
Identification of opportunities for :		
<ul style="list-style-type: none"> <li>• Own skills development</li> </ul>	Y	You have identified opportunities for skills development. Your proposal will enable you to develop your skills in the areas required by this project.
<ul style="list-style-type: none"> <li>• Collaborative working</li> </ul>	Y	Your plan to work with the flu expert at Glasgow University will give you the opportunity to work collaboratively.
<ul style="list-style-type: none"> <li>• Accessing less familiar learning environments</li> </ul>	Y	You are planning to use University/online libraries. In addition, working with the flu professor will give you experience of a new way of learning.
<ul style="list-style-type: none"> <li>• Application of science subject knowledge and skills across different disciplines</li> </ul>	Y	Your project gives you the opportunity to apply your AH knowledge. In choosing this area to research you will be applying this knowledge in the area of public health and be developing your understanding of good communication with the public.
<ul style="list-style-type: none"> <li>• Making connections between subject knowledge and the wider world</li> </ul>	Y	Your potential contribution to the website that is being developed will link your work to the real world as you are potentially providing information that could be of value to members of the public.
<b>Grade A Criteria</b>		
Well conceived proposal which sets creative and challenging goals which are at the same time realistic, achievable and practicable	Y	You have set yourself challenging goals and your project has the potential to cover a very broad range of areas in a lot of detail. You planning to cover a lot of work in this proposal and it is going to be really important to plan your time carefully.
Robust and carefully argued justification of the proposal	Y	You have thought carefully about your project and it seems well thought through.
Substantial links and understanding of possible connections across disciplines contributing to the project	Y	It is clear that you plan to touch on a wide range of areas in your project. It clearly utilises your AH knowledge and may well take you into developing your computing skills as well.

15.10.09

## Science: Interdisciplinary Project

### Plan

Candidate name						
SCN						
Centre name						
Teacher/lecturer name						
Project title	The impact of pandemics past, present and future.					
Is this a group project? yes <input type="checkbox"/> no <input checked="" type="checkbox"/>	If a group project, what will your role or responsibilities be?					
Timescales (start, finish and milestones)	This is shown within my Gantt chart.					
Planning – state how you are going to meet the agreed objectives of your project	<p>I am starting my project in mid-October and plan to finish it my mid-March. My project is planned to last a period of 19 weeks (holiday times planned in). I plan to make contact with the chairman of the U.K. Clinical Virology Network and make a questionnaire to determine public knowledge for the U.K.C.V.N. This will then be integrated into the U.K.C.V.N. website as part of an interactive quiz that will test public understanding as well as provide them with the information they need. I will need to explain the questionnaires to a variety of age groups which will improve my interpersonal skills. I will trial my surveys with my class mates and adults. I will also research various historical pandemics and case studies in order to better understand their impact on society. I will present the findings and the results of my interactions with the U.K.C.V.N. near the end of my project.</p>					





**Research methods (contacting companies, surveys, focus groups, experimentation)**

This is shown within my Gantt chart.

**Presentation:**

- **Who do I think will benefit from listening / reading / looking at my presentation of my project findings/product?**  
Members of the British public viewing MyVirus website.
- **What methods are appropriate to your audience (for example demonstration, presentation software, websites, oral, report, piece of theatre, DVD, wikiblog or any combination).**  
Interactive questionnaire on MyVirus website.

**Dependencies (what is required for your project to go ahead i.e. reliance on other people or resources, steps in plan that must be completed before starting the next step).**

The Gantt chart above has helped me work out the dependencies within my project. I can't meet the virologist until I have prepared the questionnaire and the questions from the people taking it have been gathered.

**Contingencies**

**Any anticipated problems?**

Virologist is too busy to meet me.

Cover all contact by e-mail.

Unable to circulate questionnaire due to lack of time in classes.

Find another group of people to circulate the questionnaire round e.g. church.

**Method for recording own skills development and future areas for improvement**

Throughout the course of my project, I will be keeping a detailed log book of all my activities pertaining to the project e.g. conversations with teachers or contact, research done, results of questionnaire etc.

**Assessor comments**

<b>Plan approved</b>		<b>Further work required</b>
<b>Candidate signature</b>		<b>Date</b> 29/10/09
<b>Assessor signature</b>		<b>Date</b> 29-10-09

## Science Baccaureate: Project Plan

Name: \_\_\_\_\_

Grade C Criteria		Comments
Development of clear project objectives in line with project proposal	Y	Your plan broadly covers your proposals objectives. You must make sure that have enough detail in your planning to enable you achieve your ambitious project objectives.
Relevant and detailed planning strands to enable the project to be implemented, monitored, presented and evaluated	Y	Your planning strands are adequate but more detail would help you to keep track of how your project progresses and what your next steps should be.
Realistic timescales and achievable milestones for each stage of the project	Y	The timescales that you have chosen are achievable but you will need to keep on top of your planning if you are going to fit this in with the five AHs that you are studying this session.
Clear identification of resources needed, research methodologies to be used, opportunities for support and feedback	Y	You have identified resources that you will use. Make sure that you make the most of the knowledge that you can gain from working with your external contacts. These contacts will be able to provide you with advice and support.
<b>Grade A Criteria</b>		
Careful selection and effective use of research/investigation techniques	Y	The research techniques that you are proposing seem suitable.
Anticipation of probable and possible factors which may impact of the project	Y	You have considered this aspect are you sure that there are not any more factors?
Clear identification of dependencies or reliance on the success of other strands of work and of necessary adjustments to the plan	Y	You have identified the basic dependencies in your project.
Outline the process for achieving own identified development needs	Y	It is good that you plan to record your developmental progress.

### **Further assessor comments:**

Your proposal was very detailed and has the potential to be a really interesting project that will deepen your knowledge and provide a valuable resource for the public. Your plan covers the basics but as you work through this project you may find it valuable to revisit it and to add in more detail to individual tasks.

29.10.09

## Science: Interdisciplinary Project

### Evaluation of project

<b>Candidate name</b>								
<b>SCN</b>								
<b>Centre name</b>								
<b>Assessor name</b>								
<b>Project title</b>	The threat of viral pandemics to the modern world							
<p><b>How successful has my project been overall (planning, implementation, and findings/outcomes in terms of strengths, weaknesses and learning points)? Justify your response using supporting evidence</b></p> <p>There were three major tasks that I wanted to accomplish in my project. These are outlined in my proposal. Two of them were completed almost completely as planned (gathering questions the public had for integration to MyVirus website and carrying out independent research on a selection of significant viruses). The third was involved in statistics involved in viral pandemics. While I did use information on the World Health Organisation website regarding the outbreak and subsequent spread of Swine Flu (the map of the virus' progress over time was particularly useful) I never carried out surveys on the general public. This was because I eventually considered this not to be terribly useful to the overall project and would perhaps have caused it to lose some focus. With the sample size that I have access to compared to the actual extent of global pandemics, the reliability of findings would have been questionable. Further, putting questions to the public which could actually provide statistics (and not just answers) would not have been possible. And, in actuality, the survey would have been made redundant as the public's questions generated by the questionnaire provided me with their understanding of pandemics qualitatively and showed me the key issues in their minds (e.g. vaccines and Swine Flu).</p> <p>In terms of research, it was as extensive as it was broad. As already mention statistics from the WHO were very useful. I also made extensive use of the school library (a library skills session provided by the school librarian proved to be invaluable). I also made use of some more interactive sources. Talks from TED (Technology, Entertainment, Design) on how human viruses often mutate from animal viruses proved to be an interesting lead into other areas. I also made use of the U.S. Department of Health's online fact files on various viral disease which proved to be an authoritative source of information.</p> <p>As far as the planning of the overall project went, it was swings and roundabouts. Time management and foresight could have been better utilised. While the plan could theoretically be followed quite easily, it did not take into account busier times of year (such as around prelims) when not as much time could be dedicated to the Baccalaureate. However, during quieter times I was able to catch up and for this</p>								

reason, the project was completed at around the date it was originally planned for. Information management proved to be a much more natural skill to me – all sources of information were recorded and often printed out in order to provide easy reference later on. All physical findings were kept in a designated folder while anything that was on the computer was archived in a methodical way.

In terms to alterations to the original plan, there were very few and they came quite early on in the project. Originally I had planned to consider pandemics in a wider sense but, in order to acquire more focus, I honed in on viral pandemics. As explained earlier, I also removed normal surveying from the project (while focussing more on questions the public had). I also changed the original purpose of actually studying the viruses and chose specific case studies and the impact they had on society, civilisation and medical knowledge (e.g. outbreak of Zaire-ebola, swine flu pandemic and plagues of mediaeval Europe).

The presentation aspect of the project was a little disappointing and the problem was partially related to time management. It was at a very busy time of year and there were other academic and social pressures and I felt that I didn't quite add as much polish to presentation as I might have with some more time. Regardless, I pushed on and presented my findings on the appointed day. I felt my audience were genuinely interested in my findings and were enthused by my way of presenting, even if it was a little less orthodox than others. I felt that I effectively used Microsoft Powerpoint and also ensured that my notes were minimal in order to maximise audience engagement. I also included a multimedia element to my presentation with a short video which gave something of a "crash course" to those not familiar with virology.

Throughout the course of my Baccalaureate project I learned some valuable lessons particularly in time management, planning, interpersonal skills and presentation. While a little dubious of the project at first I was soon zealously researching various viruses and genuinely enjoyed investigating these tiny pathogens.

#### **How effective were my communication methods?**

Above all else, I wanted my presentation to be clear and understood by all who listened to it. To this end, I opened with a brief description of viruses and their effects on living systems. I provided a short video clip showing various stages in a viral cycle to which I provided commentary. As the target audience were a mixed group, not all necessarily acquainted with the key concepts of viruses I think this was *very* effective.

After this I dived right into the main body of my project – namely my interaction with the public. I highlighted some of the more interesting questions posed by the public and this actually led me on to the case studies area of the talk. This section of the project, concerning my interactions with the public was, I believe, quite well received with the questions asked being of the general consensus of the audience as well.

Next I covered the case studies. While I was interested by them all (particularly

the mediaeval plagues of Europe) it was quite apparent that the audience did not quite share that sentiment. Fortunately, I had foreseen this and attempted to keep the information as much related to real life as possible – I didn't entirely fail. When presenting the case study of swine flu the reaction was different to what I might have expected. And so even the presentation augmented my findings as I could see that as Swine Flu was perceived as being "over", the general public were no longer interested.

Overall I found my methods of presentation to be conducive of audience stimulation and while not quite keeping them on tenterhooks throughout ensured that my findings were heard and hopefully carefully thought about. Certain parts of my presentation involved less conventional methods of presentation which I felt were less well taken to by older members of the audience. I learned a valuable lesson in how best to deliver a presentation and how carefully I ought to consider my target audience.

**Is there any aspect of my project that could be taken further? What might next steps be?**

I think that perhaps, in the end, neglecting the surveys was a mistake. While earlier forms of the survey would have been unsuitable, I think it could have made for valuable research to have studied the development of Swine Flu perception. However, it was not this aspect that I originally rejected but more to do with general pandemics and public knowledge which couldn't really be analysed statistically. Had people been surveyed throughout the period of mild hysteria over swine flu and then afterwards when the threat had been abated, it would have revealed changing attitudes. It would also have been interesting to poll people on their attitude to mass vaccinations and how many people had actually received the vaccination.

While at the projects conclusion my findings are still being integrated into the website of the United Kingdom Clinical Virology Network, further work could entail seeing what else I could be involved in within the UKCVN.

<b>Candidate signature</b>		<b>Date</b>	24/04/10
<b>Assessor signature</b>		<b>Date</b>	

## Science: Interdisciplinary Project

### Self evaluation of generic and cognitive skills development

<b>Candidate name</b>									
<b>SCN</b>									
<b>Centre name</b>									
<b>Assessor name</b>									
<b>Project title</b>	The threat of viral pandemics to the modern world								

When evaluating your generic and cognitive skills use the information in the left hand column to help you consider your skills development.

Generic and Cognitive Skills	Self-evaluation
<b>Application of subject knowledge and understanding</b> <ul style="list-style-type: none"> <li>• Candidates should think about practical uses for the science(s) they have learned.</li> <li>• Build these ideas into meaningful and realistic contexts, chosen from one or more of the Broad Contexts (citizenship, economic development, employability, enterprise and sustainable development).</li> <li>• Plan how they can use their knowledge of sciences effectively as part of a successful project.</li> </ul>	<ul style="list-style-type: none"> <li>• A good knowledge of Biology was extremely important to the investigation. Chemistry was also useful and Mathematics to understand the statistics.</li> <li>• The project encompassed citizenship as part of the project's findings were used to produce a section of the UK Clinical Virology Network web page which answered many frequently asked questions by the public. To a lesser extent the project also looked at sustainable development as it looked at how viral pandemics' impact can be reduced and how communities recovered (or didn't) after a fatal outbreak.</li> <li>• As mentioned, Biology was the key science utilised. It was important to understand the mechanisms of viruses, particularly of transmission as this is largely what determines the scale of a pandemic.</li> </ul>

<ul style="list-style-type: none"><li>• Use their sciences to help them carry out various aspects of the project.</li></ul>	<ul style="list-style-type: none"><li>• Biology allowed me to understand the biological significance of historical and present day outbreaks. I had also gained a wealth of practical and organisational skills from my Advanced Higher science projects (Biology, Chemistry and Physics) which I was able to utilise and develop throughout the course of my investigation.</li></ul>
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Research skills – plan, research, analyse and evaluate	
<p>Plan</p> <ul style="list-style-type: none"> <li>• Define your research subject by identifying its scope and key concepts.</li> <li>• Define your research process by identifying tasks and creating a schedule.</li> <li>• Show initiative in choosing methods of research eg contacting companies, surveys, focus groups, experimentation.</li> <li>• Identify and use relevant tools, resources and contacts for your research process.</li> </ul>	<ul style="list-style-type: none"> <li>• I focussed on viral pandemic case studies and public understanding of viruses. This involved personal research utilising various sources (online articles, journals, videos etc.). I was also had a contact who is a pandemic influenza expert at Glasgow university.</li> <li>• Major tasks were set out using a template which outlined what each task entailed. I also used weekly planners to fit my project in around the rest of my academic life. On top of that my whole project was set time scaled to a period of 20 weeks. Key tasks for each week were outlined on a Gantt chart.</li> <li>• I surveyed the public for frequently asked questions and refined them with the help of a teacher who writes exam papers. I forwarded answered questions (researched largely using U.S. Department of Health data) to flu professor for use on UKCVN. Questions that I was in doubt of or were beyond my scope, I asked for advice of my contact.</li> <li>• I was in contact with various teachers, members of the public and two flu professors. I collated all my findings in folders or on the computer. My main sources of research were internet journals, videos and governmental health websites.</li> </ul>
<p>Research</p> <ul style="list-style-type: none"> <li>• Carry out research from a variety of sources.</li> </ul>	<ul style="list-style-type: none"> <li>• I used World Health Organisation statistics, United States Department of Health virus fact files, videos from TED (Technology, Entertainment, Design) and numerous books and internet sources.</li> </ul>

<ul style="list-style-type: none"> <li>• Keep records and notes on strategies, sources, tools and resources used.</li> <li>• Adopt a referencing methodology (where appropriate).</li> </ul>	<ul style="list-style-type: none"> <li>• I kept a log book throughout the course of the project to record my thoughts and regularly checked my plan and proposal to ensure that the project was on track.</li> <li>• All website addresses and book titles were noted for future reference.</li> </ul>
<p>Analyse</p> <ul style="list-style-type: none"> <li>• Analyse the usefulness and reliability of materials gathered and resources consulted.</li> <li>• Return to research stage as necessary</li> </ul>	<ul style="list-style-type: none"> <li>• My part in the UKCVN website would be especially useful to the general public as it addresses common concerns. The case studies illustrate lessons from history and what action should be taken in the event of future pandemics. As many of my primary sources were provided by the government or an expert, it could be counted on for reliability.</li> <li>• Research was carried out right until the presentation as new evidence and threads came to light. As Swine Flu was such a current affair, I was able to constantly analyse its impact</li> </ul>
<p>Evaluate</p> <ul style="list-style-type: none"> <li>• Evaluate the research process.</li> </ul>	<ul style="list-style-type: none"> <li>• The log book provided a natural way of evaluating where my progress stood in the project as a whole and what I still needed to accomplish.</li> </ul>

Interpersonal skills – negotiate and collaborate	
<ul style="list-style-type: none"> <li>• Consider other peoples' views/feedback.</li> <li>• Discuss issues of concern, seeking resolution where needed.</li> <li>• Adjust approach in response to a situation/environment.</li> <li>• Have positive self belief.</li> <li>• Be confident enough to offer and ask for support.</li> </ul>	<ul style="list-style-type: none"> <li>• Received considerable feedback from teacher's on my overall progress. I also received considerable guidance from a teacher who writes exam MCQ and from my contact on the collection of questions that I had gathered (e.g. too many swine flu questions which didn't have much longevity).</li> <li>• Frequently rendezvoused with teacher's guiding my progress. Also discussed progress of projects with other Baccalaureate students. Asked the teacher handing my questionnaire to younger classes to put their name on their questionnaire – not for identity purposes but to reduce frivolous questions.</li> <li>• Occasionally the plan had to be altered in order if my schedule did not allow progress in the project to be carried out in the project at the planned time. As mentioned I also asked pupils to name their questionnaire sheets.</li> <li>• I never became disillusioned with my project and knew that it would yield good results and would be a useful public resource. I felt my overall confidence in the project grow exponentially as the project advanced and gained progressively more focus.</li> <li>• I co-operated with other Baccalaureate students (carrying out completely different investigations) in order to compare progress of logbooks and overall progress of our projects.</li> </ul>
Planning – time, resource and information management	
<ul style="list-style-type: none"> <li>• Estimate time needed and set milestones (targets).</li> </ul>	<ul style="list-style-type: none"> <li>• I divided my project into a number of weeks at the start of the project with different tasks that needed to be completed each week (using the Gantt chart)</li> </ul>

<ul style="list-style-type: none"> <li>• Monitor/record progress using tools such as schedules, diaries, logs and calendars to help completion of activities.</li> <li>• Consider any probable barriers to achievement and take steps to minimise them.</li> </ul>	<ul style="list-style-type: none"> <li>• As well as my log book I also used a Gantt chart to fit my project into a time frame of around 20 weeks.</li> <li>• I considered time management issues arising at busy times of the year (e.g. prelims) and rearranged scheduled pieces of work accordingly – reducing it in times where I would be hard pushed to make much progress in my Baccalaureate.</li> </ul>
<b>Independent learning – autonomy and challenge in own learning</b>	
<ul style="list-style-type: none"> <li>• Use my skills responsibly to make things happen.</li> <li>• Take initiative to establish links with other learning environments/opportunities.</li> <li>• Look for challenges and don't necessarily take the easy option.</li> </ul>	<ul style="list-style-type: none"> <li>• I was largely independent and had to make sure that questionnaires were handed out to the right people and that I retrieved results. While I was introduced to my contact by a teacher who had previously worked with him, it was my responsibility to maintain contact and make the most efficient use of his skills.</li> <li>• I attended a library skills section in the library and independently made contact with an influenza expert at Glasgow University. I also rendezvoused with a MCQ expert who teaches at my school.</li> <li>• I made every effort to distribute the questionnaire to as large a selection of people possible. I also gave my questionnaire sheet a little originality and a bit of a personal flare. This allowed the public to easily relate to the information in the questionnaire and stimulate them to pose some more interesting questions.</li> </ul>

<b>Problem solving – creative approaches; critical thinking; logical approaches</b>	
<ul style="list-style-type: none"> <li>• Generate and explore ideas to support my project.</li> <li>• Use creative approaches such as lateral thinking.</li> <li>• Use logical, step by step thinking approaches.</li> <li>• Consider how a situation may have arisen and possible contributory factors.</li> <li>• Think critically about possible actions/changes that would improve the situation.</li> <li>• Analyse points of view in source materials in order to support findings from research eg flaws in the reasoning; relevance; reliability; supporting evidence; credibility of sources of evidence.</li> </ul>	<ul style="list-style-type: none"> <li>• Original idea for project was entirely my own idea and was largely developed independently.</li> <li>• I needed to adopt the mindset of the general public with no background knowledge of viruses in order to design my leaflet questionnaire. I had to provide them with information that would actually get them thinking and questioning.</li> <li>• Some questions asked by the public required a great deal of thought, research and inquiry of Biology teachers and my contact.</li> <li>• Survey was not distributed by teachers to classes due to a forgetful teacher or lack of time in a lesson.</li> <li>• Find a method of getting the questionnaires directly to target e.g. use a different group of people outside school e.g. church or sports club.</li> <li>• Many sources were neutral simply providing observable facts. Others were actually proposing new theories and so weren't necessarily as reliable – I was able to pose new theories to my flu expert contact and hear his views. Information collected from government websites was likely to be reliable and accurate.</li> </ul>
<b>Presentation skills</b>	
<ul style="list-style-type: none"> <li>• Choose appropriate formats and apply effectively eg written, oral, video, multimedia.</li> </ul>	<ul style="list-style-type: none"> <li>• My presentation was done by way of a power point based talk with a small amount of multimedia involved.</li> </ul>

<ul style="list-style-type: none"> <li>• Consider my target audience, the layout, structure, degree of formality of my presentation.</li>   <li>• Gather, select and include relevant information or ideas, emphasising the main points.</li>   <li>• Present information/ideas/reflections with supporting detail in a logical order, reaching a reasoned conclusion.</li> </ul>	<ul style="list-style-type: none"> <li>• My target audience was composed largely of people my own age and so I wanted my talk to be both educational and entertaining – something which I believe I accomplished. However it was also a graded presentation and so I made the talk well structured and informative. My presentation was structured around the three main tasks of my project and lasted around 15 minutes.</li>   <li>• My presentation showed my audience what each individual aspect and task that my project entailed. I tried to minimise the amount of information on the screen and instead presented it orally with relevant images or graphs on the screen.</li>   <li>• The presentation followed the order in which my project progressed which kept it logical and easy to follow. Combining all my findings I reached conclusions from all my tasks.</li> </ul>
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Self evaluation – recognition of own skills development and future areas for development	
<ul style="list-style-type: none"> <li>• Ask for feedback and deal positively with praise, setbacks and criticism.</li>   <li>• Reflect on my experiences and feedback from others to assess the development of my knowledge, skills and understanding.</li>   <li>• Learn from my experiences and use to inform future progress.</li> </ul>	<ul style="list-style-type: none"> <li>• Fellow Baccalaureate students were inspired by my early start to my practical project. My methods of organisation were considered ineffective by one supervisory teacher; however I assured them that it was tried and tested and worked effectively for me.</li>   <li>• Greatly developed several skills, notably presentation, time management, various research skills and interpersonal skills. I have also gained a wealth of information on viruses.</li>   <li>• Inevitably mistakes were made. But I have learned from my project that there are no such things as disasters – only opportunities. And indeed, opportunities for fresh disasters. I also learned that a project can only really be quality driven if it is carried out with enthusiasm and a genuine interest for the research topic.</li> </ul>
<p><i>This section is not mandatory. It has been included to allow the candidate the opportunity to undertake an overall reflection of their project.</i></p> <p><b>Reflection on my experiences throughout this project</b> (for example things I feel I have achieved, things I have done that I feel particularly proud of, anything I would do differently were I to do something similar in future).</p> <p>Upon quiet reflection in the comfort of my own home, I was genuinely surprised to realise I actually knew so much on a variety of viruses. Further this knowledge is both useful and topical. With such viruses as HIV, Swine Flu and HPV being the forefront of current affairs, I am one step ahead of the game of life in knowing the causes and effects and the mechanisms that drive these deadly little pathogens.</p> <p><b>Are there any skills that you have used in this project that you would like to develop further?</b> (for example, using skills in even more challenging situations, more working on own, more team working).</p> <p>I would definitely like to further develop presentation skills. Prior to my Baccalaureate project I had done little public speaking and, while I found the experience daunting, it was nonetheless enjoyable and a good way to spread ideas efficiently... virally if you will.</p>	

24/04/10

**Science: Interdisciplinary Project****Assessment checklist****Name:**

You may want to use this to ensure that you have addressed all the requirements of the Unit prior to submission of a particular piece of evidence.

**Science Baccalaureate: Project Proposal****Name:**

Grade C Criteria	Y/N	Comments	Internal Verification
Clear aims and reasoned arguments to support the relevance and practicability of the project	Y	You have researched your proposal in detail and have developed your thoughts about what you want to research. Your project is relevant to current health issues and you seem to have developed a good range of methods in order to tackle it.	✓
Identification of opportunities for :			
<ul style="list-style-type: none"> <li>• Own skills development</li> </ul>	Y	You have identified opportunities for skills development. Your proposal will enable you to develop your skills in the areas required by this project.	✓
<ul style="list-style-type: none"> <li>• Collaborative working</li> </ul>	Y	Your plan to work with the flu expert at Glasgow University will give you the opportunity to work collaboratively.	✓
<ul style="list-style-type: none"> <li>• Accessing less familiar learning environments</li> </ul>	Y	You are planning to use University/online libraries. In addition, working with the flu professor will give you experience of a new way of learning.	✓
<ul style="list-style-type: none"> <li>• Application of science subject knowledge and skills across different disciplines</li> </ul>	Y	Your project gives you the opportunity to apply your AH knowledge. In choosing this area to research you will be applying this knowledge in the area of public health and be developing your understanding of good communication with the public.	✓
<ul style="list-style-type: none"> <li>• Making connections between subject knowledge and the wider world</li> </ul>	Y	Your potential contribution to the website that is being developed will link your work to the real world as you are potentially providing information that could be of value to members of the public.	✓
<b>Grade A Criteria</b>			
Well conceived proposal which sets creative and challenging goals which are at the same time realistic, achievable and practicable	Y	You have set yourself challenging goals and your project has the potential to cover a very broad range of areas in a lot of detail. You planning to cover a lot of work in this proposal and it is going to be really important to plan your time carefully.	✓
Robust and carefully	Y	You have thought carefully about your project	✓

**Science: Interdisciplinary Project****Assessment checklist**

argued justification of the proposal		and it seems well thought through.	
Substantial links and understanding of possible connections across disciplines contributing to the project	Y	It is clear that you plan to touch on a wide range of areas in your project. It clearly utilises your AH knowledge and may well take you into developing your computing skills as well.	✓

Science Baccalaureate: Project Plan

Name: *...*

Grade C Criteria		Comments	Internal Verification
Development of clear project objectives in line with project proposal	Y	Your plan broadly covers your proposals objectives. You must make sure that have enough detail in your planning to enable you achieve your ambitious project objectives.	✓
Relevant and detailed planning strands to enable the project to be implemented, monitored, presented and evaluated	Y	Your planning strands are adequate but more detail would help you to keep track of how your project progresses and what your next steps should be.	✓
Realistic timescales and achievable milestones for each stage of the project	Y	The timescales that you have chosen are achievable but you will need to keep on top of your planning if you are going to fit this in with the five AHs that you are studying this session.	✓
Clear identification of resources needed, research methodologies to be used, opportunities for support and feedback	Y	You have identified resources that you will use. Make sure that you make the most of the knowledge that you can gain from working with your external contacts. These contacts will be able to provide you with advice and support.	✓
<b>Grade A Criteria</b>			
Careful selection and effective use of research/investigation techniques	Y	The research techniques that you are proposing seem suitable.	✓
Anticipation of probable and possible factors which may impact of the project	Y	You have considered this aspect are you sure that there are not any more factors?	✓
Clear identification of dependencies or reliance on the success of other strands of work and of necessary adjustments to the plan	Y	You have identified the basic dependencies in your project.	✓
Outline the process for achieving own identified development needs	Y	It is good that you plan to record your developmental progress.	✓

**Further assessor comments:**

Your proposal was very detailed and has the potential to be a really interesting project that will deepen your knowledge and provide a valuable resource for the public. Your plan

## **Science: Interdisciplinary Project**

## **Assessment checklist**

covers the basics but as you work through this project you may find it valuable to revisit it and to add in more detail to individual tasks.

Science Baccalaureate: Presentation of project findings/product

Name:

Grade C Criteria	Y/N	Comments	Internal Verification
Evidence of effective and critical use of:			
<ul style="list-style-type: none"> <li>Resources</li> </ul>	Y	Outlined use of online resources, books, and people.	✓
<ul style="list-style-type: none"> <li>Research methodologies</li> </ul>	Y	This project followed a clear linear progression. His initial background research was followed by planning and administering his questionnaire and then developing his responses and contribution to the public website.	✓
<ul style="list-style-type: none"> <li>Information and time management</li> </ul>	Y	has coped well with his significant academic demands (5 Advanced Highers in addition to the Bacc) illustrating an overall good time management. He didn't use his Gantt chart as much as he had hoped he would. He managed information well – referencing appropriately in his Progress Log.	✓
<ul style="list-style-type: none"> <li>Prioritisation</li> </ul>	Y	He prioritised the research process effectively – enabling him to produce his contribution to the website.	✓
<ul style="list-style-type: none"> <li>Problem-solving approach to reach objectives</li> </ul>	Y	He used a problem-solving approach during the research. Examples would be where he reviewed his initial idea for a public survey and decided that, following the information gained with his questionnaire that this was unnecessary. He also had to ensure that his questionnaire was not "abused" and came up with a good solution to that problem.	✓
<ul style="list-style-type: none"> <li>Feedback</li> </ul>	Y	He received feedback from the people that he collaborated on during this project. This seemed to be particularly valuable when he was developing his questionnaire.	✓
<ul style="list-style-type: none"> <li>Collaborative approaches</li> </ul>	Y	This project clearly required him to collaborate with the Professor whose website he was contributing to.	✓

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<ul style="list-style-type: none"> <li>Self-monitoring</li> </ul>	Y	used his log book to monitor his progress. He also used his Gantt chart – though not as much as he thinks that he should have done.	✓
Application of specialist and interdisciplinary subject knowledge to establish meaningful connections within the broad theme	Y	Clear links between biology and history – particularly when exploring the historical aspects of pandemics. Definite use of biology, biochemistry to help him understand the virus lifecycle and the progression of pandemics.	✓
Clear presentation of main findings/product	Y	There were many good aspects to his presentation which provided a overview of his project and his findings. He also presented the questions/answers/MCQ's that he developed for the website. At the time of concluding the project, Andrew is still waiting for the website to go live.	✓
<b>Grade A Criteria</b>			
Critical thinking, analysis and reflection used at key stages in the project to construct rigorous arguments, draw convincing, well supported conclusions, identify and resolve issues	Y	There is some evidence of this – particularly in his decision to modify his plan of action as a result of the information he was gaining as the project progressed.	✓
Skilful and creative use of resources, including people, information and learning contexts to progress the project	N	There were some elements of this evident in his research however he could have developed the interpersonal aspect of this project further which would have given his project further depth.	
Accurate and deepening of understanding through application of subject knowledge in the chosen context, with meaningful connections well established	Y	Has developed his subject knowledge significantly. His questionnaire has really helped him to understand the level of public understanding of viruses which has enabled him to connect his academic work to real-life.	✓

Science Baccalaureate: Evaluation of project

Name:

Grade C Criteria	Y/N	Comments	Internal Verification
In terms of strengths, weaknesses and learning points, a critical and justified evaluation of all stages of the project process:			
<ul style="list-style-type: none"> <li>Planning</li> </ul>	Y	A reasonable account of the planning process which highlights the fact that he could have managed his time a bit better. A useful reflection which will help him in the future. He did not take account of how much the five Advanced Highers he was taking (as well as the IP) would be such a huge commitment. He adapted well and it is all credit to him that he is on course with his AH's as well as finding time to keep going with the IP.	✓
<ul style="list-style-type: none"> <li>Implementation</li> </ul>	Y	No problem with the implementation of his project. It had a broad scope, and although he was not able to complete the public survey, he felt that he could justify its omission. He adapted his plan to focus on viral pandemics – this was sensible as his original project was very broad. Changes he made were justified and sensible.	✓
<ul style="list-style-type: none"> <li>Findings/product</li> </ul>	Y	His presentation was somewhat disappointing as he had not rehearsed himself thoroughly. As he covers in his self-evaluation – he is not used to public speaking and the communication of his thoughts and findings to an audience of his peers was daunting. His presentation did communicate his findings and demonstrated his enthusiasm for the subject and showed how his knowledge and understanding have improved.	✓
Effective use of chosen communication methods	Y	Using a powerpoint presentation was a good way to present his	✓

# Science: Interdisciplinary Project

# Assessment checklist

		findings. The additional end product of his research was his contribution to the viral website. He has contributed his work to this website and is now waiting for it to go live.	
<b>Grade A Criteria</b>			
Incisive, well balanced evaluation of the project outcome against project aims, supported convincingly by well selected evidence	Y	This evaluation provides a candid account of the research process that [redacted] has undertaken. He is disappointed that he did not meet all of his objectives – namely the public awareness survey. He has had a difficult job managing his academic commitments this year and it was right for him to modify his plan to ensure that it was achievable in the time frame that he had. He has reflected upon his presentation style and I feel that this has been a valuable learning experience for him. It is good to see that he has views about where his research could develop in the future.	✓
Careful choice and skilful use of communication and presentation methods	N		

Science Baccalaureate: Self-evaluation assessor comments

Name: \_\_\_\_\_

Grade C Criteria	Y/N	Comments	Internal Verification
A critical evaluation of own skills development against the list of specified generic/cognitive skills	Y	A good evaluation of skills development throughout this project.	✓
A reasoned evaluation of own strengths and key goals for development in the specified list of generic/cognitive skills, which takes account of feedback sought and evidenced from others throughout the project	Y	There are several references to feedback with regard to skills development and _____ notes what he would like to do in terms of future development. This is a good evaluation of his strengths and indicates areas for development.	✓
<b>Grade A Criteria</b>			
Insightful, balanced and well structured self evaluation of own development	Y	A well structured evaluation in which he reflects upon his skills development.	✓
Assertive and justified use of feedback from others in evaluation and identification of development areas	Y	He used feedback at key points in order to help him develop. This project has enabled _____ to develop skills – public speaking, collaborating with experts in a particular field – and having to take the initiative in contacting them and maintaining their working relationship. It has enabled him to explore aspects of research world beyond that which is offered with the AH investigations.	✓

The overall grade will be:

- A indicative of a highly competent performance which meets all the additional Grade A criteria and consistently demonstrated a high degree of autonomy, initiative and effective information management across the five pieces
- B indicative of a competent Grade C performance across the five pieces, but with some aspects of work meeting the criteria for highly competent performance (as outlined by the Grade A criteria)
- C indicative of a competent performance across the five pieces, with all aspects of the work meeting the criteria identified for Grade C performance

<b>Overall grade awarded</b>	A <b>B</b> C   Unsuccessful
<b>Assessor comments</b>	
<p>As well as the Baccalaureate, _____ has undertaken 5 Advanced Highers this year – involving three further investigations. He has managed his work-load well and has finished the year smiling.</p> <p>There were two broad aims to _____ research. The first was a fact-finding investigation into public knowledge and understanding of pandemics and the second gave Andrew the opportunity to contribute to a publicly available website on viruses. This part of his research really enabled him to develop his generic and cognitive skills. He is not someone who naturally works in groups and does not feel comfortable making the first contact/working with people that he does not know. Researching the nature of questions that people have about viruses, developing answers and then communicating this to the Professor at Glasgow University required him to develop skills that did not come naturally to him. His lack of confidence in public speaking was reflected in his presentation – which did not initially strike the correct tone. He did reflect upon this and rectified this subsequently. I do feel that he has genuinely learnt about himself and developed his interpersonal and presentation skills.</p> <p>Whilst I feel that he ticks most of the A criteria, I do not think that he met them all as he could have developed his links with the people who were prepared to help him with the project a bit more.</p>	

Assessor signature \_\_\_\_\_

Date 29/4/10

Internal verifier signature \_\_\_\_\_

Date 29/4/10