

Science: Interdisciplinary Project (Advanced Higher) Assessment Support Pack



Administrative information



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Section 1

About this Assessment Support Pack

About this Assessment Support Pack

This Assessment Support Pack provides guidance on approaches to delivery and assessment of the Unit, Science: Interdisciplinary Project (Advanced Higher).

It should be read in conjunction with the Unit Specification, Science: Interdisciplinary Project (Advanced Higher).

The Assessment Support Pack gives examples of assessments that are valid, reliable and practicable which correspond to the standard of performance expected of candidates contained in the Unit specification. It also provides examples of templates that could be used by candidates to assist them with the planning of, and reflection on their Interdisciplinary Project.

The Assessment Support Pack can be used in a variety of ways including, for example:

- to generate evidence which demonstrates that candidates have achieved all cognitive and generic skills across the three stages of the Unit
- to provide exemplification of the standard of performance expected of candidates achieving the Unit, ie as a benchmark
- to help centres customise assessment tools for the Unit
- to give practitioners new ideas
- to use as a staff development tool.

It is important to emphasise that the content of this Assessment Support Pack is accessible to everyone.

Centres are encouraged to devise their own assessment tools and verify their suitability through their own internal quality assurance procedures. An effective internal quality system should be in place within the presenting centre.

Recommended reading

Before using this Assessment Support Pack, it is recommended that centres read the following documentation:

- Unit specification, Science: Interdisciplinary Project (Advanced Higher) (F785 47)
- Arrangements Document for the Scottish Baccalaureate in Science (G9CX 47).

In addition, centres may find the following documentation useful:

- *Guide to Assessment (AA4147, June 2008)*
- *SQA's Quality Framework: A guide for centres (FA1595, March 2006)*
- *Introduction to Assessment Arrangements (FA4378, November 2008)*
- *SQA Guidelines on e-assessment for Schools (BD2625, June 2005).*

Details of these and other publications are available on SQA's website. Most publications can be downloaded free of charge at www.sqa.org.uk on the 'Publications, Sales and Downloads' section. If you require a publication to be sent to you, please telephone our Customer Contact Centre on 0845 279 1000.

Section 2

About the Interdisciplinary Project

About the Interdisciplinary Project

The prime focus of the Interdisciplinary Project is the development of cognitive and generic skills which will assist the candidate to: advance as an independent learner; increase confidence; develop own learning and improve career prospects.

These skills will help candidates to tackle complex areas and also to contribute to a wider and deeper understanding of the role these skills can play. This is why these skills are valued so highly in education and industry.

The Interdisciplinary Project allows candidates to apply and extend their learning in a contemporary context, either as a stand alone qualification or as part of the Scottish Baccalaureate in Science. Candidates should select a project and design their own experience in which to further develop their skills and abilities as a successful independent learner within one of the stated broad contexts. In carrying out the project they should further develop specific cognitive and generic skills that they will need to be successful in life, future learning and work.

Candidates will be assessed on their ability to plan, manage, complete and evaluate their project and their own learning/skills development. While the assessed skills are not based on subject content, it is important that the assessor(s) are competent in science to be able to determine whether both the processes adopted and the application of knowledge/skills are appropriate to the project.

Candidates may wish to undertake the Interdisciplinary Project as part of a group. However each individual candidate must clearly define his or her roles and responsibilities and must demonstrate an appropriate level of participation in all three stages of the project. In order to pass the Unit each individual candidate must complete all five pieces of mandatory evidence and achieve at least the evidence criteria for a Grade C.

Section 3

Cognitive and generic skills

Cognitive and generic skills

Some of the ways in which candidates may demonstrate the cognitive and generic skills that are developed and assessed through the Interdisciplinary Project are outlined below.

Application of subject knowledge and understanding

- Think about practical uses for the sciences they have learned.
- 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*).
- Plan how they can use their knowledge of sciences effectively as part of a successful project.
- Use science knowledge to help them carry out various aspects of the project.

Research skills – plan, research, analyse and evaluate

Plan

- Define the research subject by identifying its scope and key concepts.
- Define the research process by identifying tasks and creating a schedule.
- Show initiative in choosing methods of research eg contacting companies, surveys, focus groups, experimentation.
- Identify and use relevant tools, resources and contacts for the research process.

Research

- Carry out research from a variety of sources.
- Keep records and notes on strategies, sources, tools and resources used.
- Adopt a referencing methodology (where appropriate).

Analyse

- Analyse the usefulness and reliability of materials gathered and resources consulted.
- Return to the research stage as necessary.

Evaluate

- Evaluate the research process.

Interpersonal skills – negotiate and collaborate

- Consider other people's views/feedback.
- Discuss issues of concern, seeking resolution where needed.
- Adjust approach in response to a situation/environment.
- Have positive self belief.
- Be confident enough to offer and ask for support.

Planning – time, resource and information management

- Estimate timescales and set milestones (targets).
- Monitor/record progress using tools such as schedules, diaries, logs and calendars to help completion of activities.
- Consider any probable barriers to achievement and take steps to minimise them.

Independent learning – autonomy and challenge in own learning

- Use skills responsibly to make things happen.
- Take the initiative to establish links with other learning environments/opportunities.
- Look for challenges and don't necessarily take the easy option.

Problem solving – critical thinking, logical and creative approaches

- Generate and explore ideas to support the project.
- Use creative approaches such as lateral thinking.
- Use logical, step by step thinking approaches.
- Consider how a situation may have arisen and possible contributory factors.
- Think critically about possible actions/changes that would improve the situation.
- Analyse points of view in source materials in order to support findings from the research eg flaws in the reasoning; relevance; reliability; supporting evidence; credibility of sources of evidence.

Presentation skills

- Choose appropriate formats and apply effectively eg written, oral, video, multimedia.
- Consider the target audience, the layout, structure, degree of formality of the presentation.
- Gather, select and include relevant information or ideas, emphasising the main points.
- Present information/ideas/reflections with supporting detail in a logical order, reaching a reasoned conclusion.

Self evaluation – recognition of own skills development and future areas for development

- Ask for feedback and deal positively with praise, setbacks and criticism.
- Reflect on experiences and feedback from others to assess the development of knowledge, skills and understanding.
- Learn from experiences and use to inform future progress.

Section 4

Broad contexts

Broad contexts

The project must explore and bring out the relevance of science in one or more of the broad contexts of citizenship, enterprise, employability, economic development and sustainable development. The following definitions are provided as guidance.

Citizenship

The exercise of rights and responsibilities within communities at local, national and global levels; and making informed decisions, and taking thoughtful and responsible action, locally and globally.

Education for citizenship in Scotland, Learning and Teaching Scotland 2002

Enterprise

- Develop enterprising attitudes and skills through learning and teaching across the whole curriculum.
- Experience and develop understanding of the world of work in all its diversity, including entrepreneurial activity and self-employment.
- Participate fully in enterprise activities, including those which are explicitly entrepreneurial in nature, and in which success is the result of 'hands-on' participation.
- Enjoy appropriately focused career education.

Determined to succeed, Scottish Government, 2002

Employability

A set of achievements – skills, understandings and personal attributes that make individuals more likely to gain employment and be successful in their chosen occupations.

Learning to work: enhancing employability and enterprise in Scottish further and higher education, Scottish Funding Council 2007

Economic development

The development of economic wealth of countries or regions for the well-being of their inhabitants. From a policy perspective, economic development can be defined as efforts that seek to improve the economic well-being and quality of life for a community by creating and/or retaining jobs and supporting or growing incomes and the tax base.

Wikipedia, December 2008

Sustainable development

Development which secures a balance of social, economic and environmental wellbeing in the impact of activities and decision: and which seeks to meet the needs of the present without compromising the ability of future generations to meet their own needs.

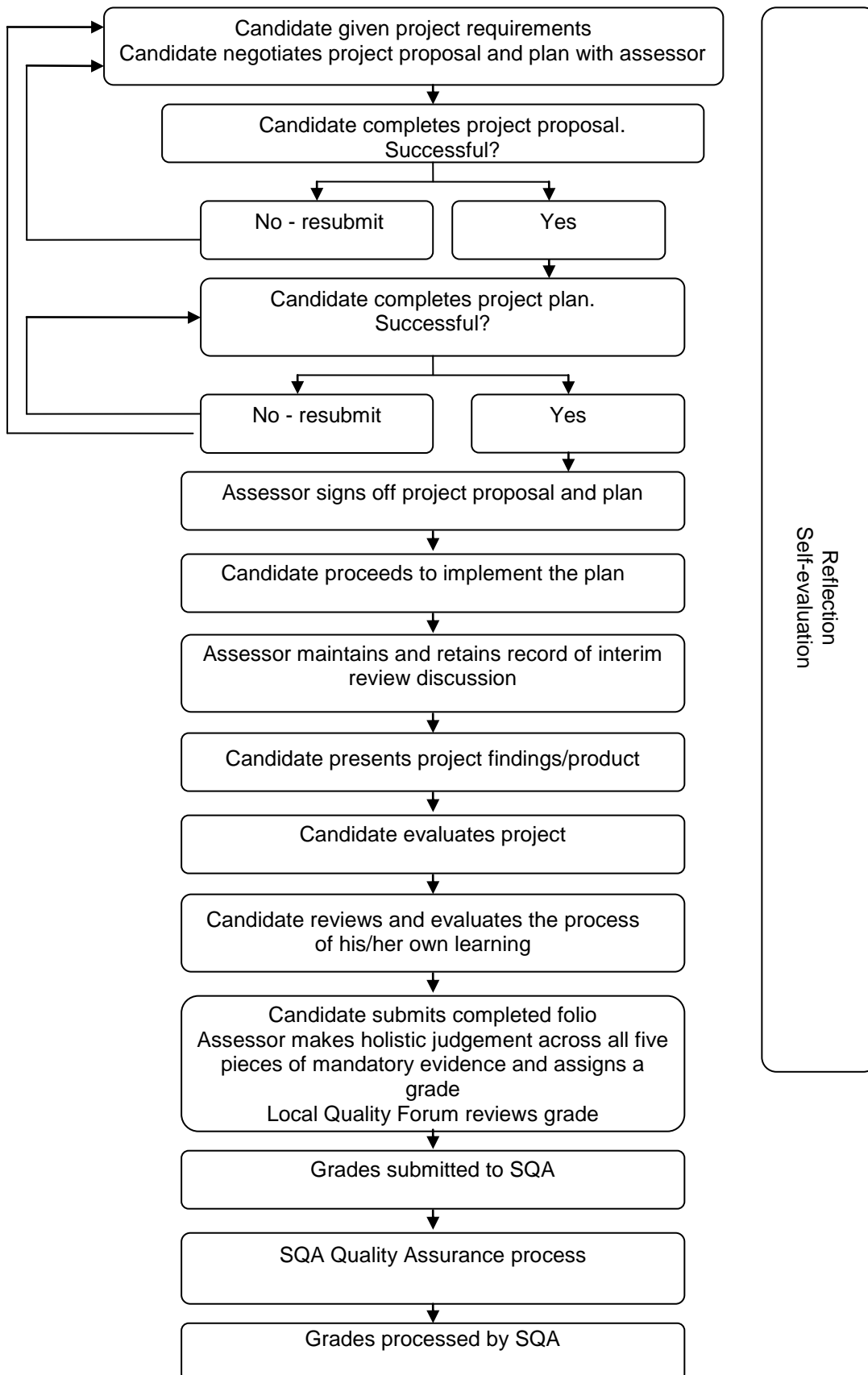
Best Value guidance, Scottish Government, 2004

Section 5

Overview of process

Overview of process

The flowchart provides an overview of the process undertaken while carrying out the project.



Reflection
Self-evaluation

Section 6

Project requirements

Project requirements

The information below sets out the requirements of the Interdisciplinary Project. This information should be given to candidates for reference before they consider the interdisciplinary project.

Project requirements – Information for candidates and assessors

The project you choose must be an investigation or a practical assignment. It should be of personal/career interest to you and will provide you with opportunities to do the following:

- link with and work within different and less familiar learning environments to support the project.
- Use your knowledge and understanding of science and other areas of learning across the curriculum in one or more of the following broad contexts:
 - employability
 - enterprise
 - citizenship
 - sustainable development
 - economic development.
- Make connections between subject knowledge and the wider world.
- Develop the following cognitive and generic skills:
 - **application** – of subject knowledge and understanding
 - **research skills** – analysis and evaluation
 - **interpersonal skills** – negotiation and collaboration
 - **planning** – time, resource and information management
 - **independent learning** – autonomy and challenge in own learning
 - **problem solving** – critical thinking; logical and creative approaches
 - **presentation skills**
 - **self evaluation** – recognition of own skills development and future areas for development.

Evidence of achievement should be organised in a folio or e-portfolio which contains five mandatory pieces of evidence. These are:

- project proposal
- project plan
- presentation of project findings/product
- evaluation of project
- self-evaluation of generic/cognitive skills development.

Assessors should ensure that they fully complete the Assessor Report along with the final grade and include this with the candidate evidence.

Evidence in the folio may be presented in any suitable recorded format including e-evidence.

Group projects

You may wish to undertake the Interdisciplinary Project as part of a group. **Each** member of your group must clearly define his/her roles and responsibilities and must demonstrate an appropriate level of participation in all five stages of the project.

You must complete all five pieces of mandatory evidence **individually**, with reference to your **own** work on the project and **your** individual skills development. However, when working as part of a group it is expected that you would make reference to collaborative work you have undertaken, emphasising your role in the project.

Section 7

Guidance on learning and teaching approaches

Guidance on learning and teaching approaches

Context for delivery

The Interdisciplinary Project is designed to provide opportunities for personal development through combining and applying a range of skills and knowledge and through exposure to less familiar learning environments. The Interdisciplinary Project should be seen as an experiential rather than a taught programme with the teacher/lecturer acting as a facilitator throughout and the candidate taking ownership of their project.

Candidates may wish to undertake the Interdisciplinary Project as part of a group. However each individual candidate must clearly define their own roles and responsibilities and must demonstrate an appropriate level of participation in all three stages of the project. In order to pass the Unit each individual candidate must complete all five pieces of mandatory evidence and achieve at least the evidence criteria for a Grade C.

1 Introduction to the skills base (cognitive and generic skills)

It will be important to have a well-planned induction to this Unit to ensure that candidates are fully aware of its nature and purpose. Time should be spent at the outset, introducing the candidates to the importance of the cognitive and generic skills valued by employers and Higher Education. This could be done using speakers from Higher Education and/or industry, but equally could be done by teacher/lecturer delivery and discussion.

Induction to the Unit should also establish clearly the contexts in which the project could be set and the terms of the project requirements. Timescales, responsibilities and constraints should be discussed and understood at the outset. Candidates should be encouraged to explore the range of opportunities available to them and to develop creative ideas before finally working on an appropriate project proposal and plan. They should also be encouraged to set themselves personal challenges and to site their project clearly within an area of personal or career interest. The importance of self-motivation, autonomous learning and self-management should be stressed.

It may be useful at this stage to spend some teacher/lecturer-led time or self-directed time considering project management skills and identifying other skills areas where the candidate may wish to seek additional advice or mentoring eg from specialist or online resources. It is important at this stage to discuss with candidates the range of presentation methods that might be suitable for their project eg demonstration, presentation software, website, written and/or oral report, piece of drama, recording, wiki, blog or a combination of methods.

It will also be helpful for the candidate to carry out and note an informal self evaluation of the specified cognitive and generic skills. This would provide a base line for comparison towards the end of the project when a formal self evaluation of development in these skills has to be made.

2 Project planning phase

Stage 1 of the project will involve considerable teacher/lecturer support and discussion with candidates. This is necessary to guide candidates in their choice of an area which interests them within one or more of the broad contexts (employability, enterprise, sustainable development, citizenship, economic development), and will help them to be clear about the project's aims and objectives. This discussion will also highlight to candidates what the purpose of the project is, what it will bring to them individually in terms of their skills development and how they might plan to do it, including where they might access different learning environments.

At the very early stage of the project, candidates should be supported by teacher/lecturer in open dialogue which may help them deal with difficult areas eg setbacks, timings, establishing viable scope of the project. This phase of formative work will encourage the skills development needed throughout the project.

Assessment of the project is holistic and therefore summative assessment and the overall grade should not be considered until Stage 3 where candidates have had the opportunity to demonstrate their experiential learning and the generic and cognitive skills.

(a) Assessment plan

Identification of submission dates for the project proposal, plan, presentation and the final folio of work should be discussed with candidates in the initial stage of the project. These dates should be built into the assessment process.

The assessment process should be explained and discussed with candidates so they are clear about what is expected of them.

(b) Project proposal

The project proposal must be considered suitable by the teacher/lecturer to meet the requirements of the Unit. The project must be achievable within the time available. The teacher/lecturer must acknowledge agreement of the proposal before the candidate proceeds to the planning stage. The candidate can be given an opportunity to revisit the project proposal and resubmit where appropriate.

(c) Project plan

Teachers/lecturers may be required to provide candidates with varying levels of support depending on each candidate's cognitive and generic skills. The support should be in form of prompts, suggestions and questioning. The candidate can be given an opportunity to revisit the project plan and resubmit where appropriate.

Teachers/lecturers should be satisfied at project approval stage that proposed work settings will provide candidates with access to appropriate resources and support and that appropriate centre partnership arrangements, where necessary, are in place.

(d) Resubmission/reassessment of project proposal and project plan

Candidates should not proceed to Stage 2 until the teacher/lecturer considers the project to be viable.

Time is allowed at the initial stage within the Unit for dialogue, feedback and resubmission of the project proposal and the project plan. Where candidates have not presented a viable plan, they should be encouraged to remediate and resubmit.

SQA's advice is that there should normally be one resubmission opportunity, or in exceptional circumstances two. In some cases candidates may be required to resubmit original work which has been revised to take account of earlier weaknesses. In other cases, candidates may be required to provide a new project proposal and/ or plan. In all cases, evidence from the original submission should be used for formative purposes prior to resubmission.

3 Implementation of project

Once the project proposal and plan have been approved by the teacher/ lecturer, the candidate will carry out the work independently. Candidates will be expected to take initiative, and to carry out and monitor their agreed plans. They will be expected to manage time, resources, links and relationships effectively throughout and to take a problem solving approach, re-prioritising when necessary.

Candidates will also be expected to set up information management systems in order to handle and organise complex information. This could involve, for example, a manual system, an e-portfolio, electronic office, webhosting and/or a referencing system.

It is important throughout the project that the candidate builds in time for reflection, actively seeking feedback from peers, specialists, teacher/lecturer and others, taking stock of progress and noting significant learning points in terms of self-development.

It is equally important that the teacher/lecturer allocates time to discuss progress and give feedback to the candidate on a one-to-one basis throughout the project. However, part of the challenge in this Unit is that the candidate will take a high degree of responsibility and ownership of the project and its management. The teacher/lecturer should not take a directive role or make frequent interventions.

During implementation, candidates are expected to further develop problem solving skills such as how to manage conflicting demands and deal with setbacks. They may not always choose the most appropriate actions first time but with reflection, would demonstrate their learning through selection of better/alternative courses of action. These should be apparent and explicit actions rather than 'I realised, so next time I will...' statement of intent.

Working collaboratively and constructively with others, eg peers, teachers, employers, supervisors or college tutors, will be an integral part of the process and candidates should be encouraged to consider the importance of developing effective interpersonal skills. It will also be important, where partners are involved in delivering and supporting the project, that regular opportunities are identified to share feedback on candidate progress.

Candidates who, with the approval of their centre, carry out project work in a workplace, community base, other educational institution or virtual community, should have clear guidance provided to them on partnership arrangements and roles and responsibilities. This guidance should include health, welfare, safety, communication and confidentiality issues.

In the final stages of the project, there may be the opportunity for candidates to deliver their project presentation to a variety of audiences eg peer groups, colleagues across partner organisations, involving them where appropriate. Sharing the learning with others and being open to their feedback could help to inform the final evaluation of their project and the self evaluation of their cognitive and generic skills development.

4 Evaluation of the project and self evaluation

When evaluating the project, candidates must include an evaluation of the project process (planning and implementation) in addition to an evaluation of the project findings/product. This should be done in terms of strengths, weaknesses and learning points.

SQA's advice is that for each piece of evidence there should normally be one resubmission opportunity, or in exceptional circumstances two. In some cases candidates may be required to resubmit original work which has been revised to take account of earlier weaknesses. In all cases, evidence from the original submission should be used for formative purposes prior to resubmission.

5 Opportunities for developing Core Skills

The project stages of planning, applying and evaluation provide ample opportunity for development of each component of Problem Solving. Within the project itself it is likely that there will be many concurrent strands which require careful thought and management, with creative approaches to possible solutions. Considerable evaluation through reflection and feedback from others on all aspects of the project is part of the assessment.

There are opportunities for using and developing communication skills when negotiating with teachers, tutors and peers, reading complex documents, presenting complex information to others and presenting and discussing project outputs. These opportunities are typical of communication tasks in the workplace and in Further or Higher Education.

Candidates should ensure that relevant information is presented clearly and coherently, including any specialist forms, with attention to spelling, punctuation and grammar which helps the meaning to be clear to the degree and accuracy expected in professional workplaces. When presenting information, candidates should use appropriate, accurate and recognised referencing systems, eg bibliographies, webographies, citation.

Working cooperatively with others is central to this Unit, as negotiation of learning environments, use of resources, context of theme and feedback from others all rely on cooperative and interpersonal skills. It is likely that other people's roles, feelings and behaviours will require to be taken into account as the project activity progresses.

Managing information systems provides a good opportunity to develop ICT skills through use of an e-portfolio to store and present information. It is likely that candidates will access electronic information from a range of sources related to both the theme chosen and/or specialist science at the planning and implementing stage of the project. In addition, in presenting information, multi-media software packages and specialist software packages in science and technology provide further opportunities for creative approaches in using ICT.

NB When accessing information candidates are expected to follow centre guidelines and etiquettes already established for using web sources. This would include any legal compliance in for example downloading, copyright or privacy.

Section 8

Guidance on approaches to assessment

Guidance on approaches to assessment

In this section of the Assessment Support Pack, reference is made to the assessor of the Unit. In many cases the teacher/lecturer facilitating the Unit will be the assessor. However, in some cases, a teacher/lecturer who was not the primary facilitator, but who has relevant competence in the project or the project process, may be an assessor. It is possible that, due to the interdisciplinary nature of the project, several assessors may be involved in assessing one project.

As an assessor you will make a holistic judgement across all five pieces of mandatory evidence required for the Unit. The standards of competence and grade criteria given in the Unit specification will allow assessors to evaluate the strengths and weaknesses of each piece of evidence before arriving at a judgement of the project overall. This should not be a 'tick list' approach to assessment but an overall evaluation using the grading criteria.

Formative assessment is particularly useful at the beginning of experiential learning. Assessment of skills and their application through the project should be considered when candidates have had the opportunity to develop skills which they can apply again. This approach of self-regulation may be new to candidates (and assessors) and is based on a shared understanding of standards.

Candidates should refer to the grading criteria contained within the assessment checklist before submitting the project proposal. The assessor should look at the same checklist to identify where the criteria have been demonstrated for the proposal and use the comments box in the proposal template to record and discuss with the candidate the criteria that have been met. Where criteria have not been met, this also should be recorded as candidate feedback. The candidate should then be given the opportunity to resubmit the project proposal taking on board the feedback. When the candidate resubmits the project proposal the assessor reviews their original comments to check feedback has been addressed. It is at this point that the assessor should consider the potential to proceed to the project plan.

The same process should be repeated for the project plan. Should the project plan indicate that the project is not viable, the candidate should be given the opportunity to reflect, amend and resubmit.

A copy of the project proposal and plan should be signed and retained by the assessor as a record of negotiation of evidence that the candidate has successfully prepared and presented a suitable project proposal and produced a justified a workable plan, ready for implementation.

Skills of planning and adjusting actions in response to changing circumstances should be ongoing and evidenced throughout the project. Skills development, for example through managing risk and exploring new options, should be evidenced throughout and assessed towards the end of the project. Ample opportunity should be given to candidates to learn from their new experiences and to show any relevant change.

It is recommended that candidates have an opportunity to rehearse/draft the presentation of project findings/product.

The submitted findings/product should be evaluated by the candidate before any assessor feedback is given in order to avoid influencing the candidate's own evaluation.

Once all five pieces of mandatory evidence have been assessed, a holistic judgement across all five pieces of evidence should be made.

To award an overall grade, the assessor should refer to the following:

- A indicative of a highly competent performance across the five pieces, with all pieces meeting all additional Grade A criteria
- B indicative of a competent Grade C performance across the five pieces, but with some aspects of work which meet 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.

Section 9

Exemplification

Exemplification

This section provides extracts of evidence from four candidates: two who have satisfied the criteria for a Grade A and two who have met the Grace C criteria.

The extracts of evidence include the following:

- project proposal that meets the project requirements
- project plan with milestones
- progress log (informs interim report/presentation headings and final evaluation)
- interim review
- evaluation of the project
- self evaluation of generic and cognitive skills development
- assessment checklist.

NB Although these exemplars use a previous version of the templates, they are still useful in terms of exemplifying the national standard. Examples of real candidate projects can be found on the Scottish Baccalaureate web pages www.sqa.org.uk/baccalaureates

Project 1 – Example of Grade A

Science: Interdisciplinary Project

Proposal

Candidate name	Deborah Lindsay								
SCN									
Centre name									
Assessor name									
Project title	Are low fat food products fuelling obesity and diabetes?								
Project outline (what it is I want to do and how will I go about it)									
<p>The aim of my project is to find out if there is a high sugar content in low fat food products which is contributing to obesity and type II diabetes. I propose to investigate whether there is a link between teenagers' eating habits, parental buying habits and their lifestyle and health. I propose to investigate low fat food products and compare their sugar and fat content with full fat food products on the basis of using the same brand and making a weight per weight comparison. I will present my findings during Health week and also offer my findings to the canteen manager, local supermarket and medical specialists.</p> <p>I intend to approach University X to carry out research into the mechanism of fat metabolism and how the body deals with different types of fat. I will also research practical methods that can be used to find out about saturation of fats and oils in food and carry this out on a sample of low fat and full fat food products. I also intend to research the effect of a high sugar diet on insulin production and uptake.</p> <p>I aim to complete this by the end of February.</p>									
Reasons for choosing this project (eg personal interest, future plans, links to other subjects I am studying/have studied)									
<p>I feel this is an important topic to explore. I have noticed that there is an increased range of low fat food products available yet obesity and type II diabetes are still rising in the teenage population.</p> <p>I am personally interested in living a healthy lifestyle and encouraging my family to do so also. My intention is to apply to university to study dietetics and hope eventually to become a dietician. I am looking forward to improving my research and interpersonal skills as I feel these will be useful to me at university and in my future career.</p> <p>I want to build on the knowledge gained in Higher Human Biology and Higher Chemistry and deepen my understanding of what I am learning in my Advanced Highers.</p>									

The broad contexts this project will cover are:

- Citizenship Employability Enterprise
 Economic development Sustainable development

Learning environments I will access are

I propose to conduct an online survey on eating and lifestyle habits. I intend to visit my local supermarket to find out what low fat food products are available and if possible carry out a survey of people's perceptions and buying habits.

I intend to contact University X to find out if I can assist/observe in any lab work related to fat analysis.

I intend to contact the local hospital to find out if I can interview medical specialists to find out more about type II diabetes and the implications of obesity on health.

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

Application of subject knowledge and understanding – I want to build on the knowledge gained in Higher Human Biology and Higher Chemistry and deepen my understanding of what I am learning in my Advanced Highers.

Research skills – analysis and evaluation – I have never researched a project of this size and scale and would like to develop skills on information management.

Interpersonal skills – negotiation and collaboration – I am planning to meet with other students and medical specialists. Although I feel comfortable talking to other students, I am a bit anxious talking to other adults in a professional setting.

Planning – time, resource and information management – I am familiar with using spreadsheets for simple data entry but have not yet used them to analyse data.

Independent learning – autonomy and challenge in own learning – I am looking forward to working on my own and visiting the University.

Problem solving – critical thinking: logical and creative approaches – This is an area where I feel quite confident but hope to further develop these skills during the planning stage and during my practical experiments.

Presentation skills – Although I feel confident in presenting my findings and producing a report I feel less confident in delivering an oral presentation.

Self evaluation – recognition of own skills development and future areas for development – I plan to keep a diary of my project and the skills that I have used.

Assessor comments

Good title and aims meeting project requirements.

During discussion relevance, practicability and justification contained within the proposal were well explained.

You have developed a project proposal that clearly sits within the citizenship and employability context.

Discussion illustrated that there are significant opportunities for skills development – I would recommend that you carry out an initial self evaluation of skills to highlight areas that require further development.

Your proposal to work with the supermarket, University and medical specialists involves you working outwith the school environment. Ensure the correct procedures are followed.

There are already timetabled 'lab days' for S6 and access to library passes as discussed.

Your proposal is well thought out and links your subject knowledge to current and topical health issues. Good links across subject areas.

There is a wide variety of activities which have been clearly thought out and planned to fit in with a realistic timescale. It is sufficiently challenging for Advanced Higher level.

Proposal approved	YES	Further work required	
Candidate signature			Date
Assessor signature			Date

Science: Interdisciplinary Project

Plan

Candidate name	Deborah Lindsay								
SCN									
Centre name									
Teacher/lecturer name									
Project title	Are low fat food products fuelling obesity and diabetes?								
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 I plan to carry out the project within 20 weeks. Initial self evaluation identified skills development needs. I plan to make contact with specialist teachers in other departments, University medical faculty and the supermarket to increase my confidence in dealing with others. I will also explain the survey to first year pupils and display my information at Health week improving my interpersonal skills. I will trial my surveys with my class mates and adults. I will practice my interview technique and questions with my next door neighbour (Dr Smith) and I will use the feedback gained to help develop my skills.									

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Background research																				
Find out what is available	■	■	■	■																
Check out government and NHS website	■	■	■	■																
Read, analyse and review literature	■	■	■	■	■	■														
Store relevant info for later use	■	■	■	■	■	■														
Write a review					■	■	■													
Contact specialists																				
Prepare questions based on research							■													
Find out who to contact and how							■													
Arrange meetings								■												
Record information from specialist									■											
Surveys																				
Find out about online surveys			■	■	■															
Think about target audience							■													
Devise questionnaire							■	■												
Check questions with tutor and trial							■	■												
Trial questionnaire with class mates								■	■											
Work out when survey should be available								■	■	■										
Administer questionnaire								■	■	■	■									
Work out how to analyse findings								■	■	■	■									
Analyse findings												■	■	■						
Contact supermarket	■																			
Plan supermarket questionnaire			■																	
Meet manager and arrange date for survey					■															
Check availability of info on customer buying habits					■															
Write questionnaire						■														
Carry out survey							■	■	■											
Analyse results and draw conclusions									■	■	■									

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?**
All pupils, staff canteen manager, local supermarket and specialists.
- **What methods are appropriate to your audience (for example demonstration, presentation software, websites, oral, report, piece of theatre, dvd, wiki/blog or any combination).**
- Presentation using presentation software and will also incorporate taste testing with the audience during the presentation.
- Information leaflet and poster for Health week, supermarket, school catering manager.
- Blog on diabetes association website.
- Report containing all research methodologies and findings.

Dependencies (what is required for your project to go ahead ie 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 arrange the interviews and plan the questionnaires until I have completed my research. The practical work that I carry out will be dependent upon the resources and time available in the lab.

Contingencies**Any anticipated problems?**

Supermarket says no.

Can't get lab time/equipment not available.

My plans for overcoming the anticipated problems.

I will contact a supermarket as early as possible incase they say no. If they say no I will try another supermarket.

I will contact local FE college or other schools.

<p>Medical specialist from hospital unable to meet with me.</p> <p>Health week does not go ahead.</p>	<p>I will contact GP, school nurse or community health department. I could possibly use e-mail to consult with specialist instead of meeting.</p> <p>Present findings to my PSE class or at school assembly, or on YouTube.</p>		
<p>Method for recording own skills development and future areas for improvement</p> <p>I intend to use the progress log to keep an ongoing and regular record of activities completed, skills used and to record how my skills are developing as the project progresses.</p>			
<p>Assessor comments</p> <p>Clear project objectives following your proposal. Detailed plan pulling together all strands and you have clearly thought about the timing and order of various activities. You have considered potential problems and outlined contingencies. We discussed the timing of the practical work. Your gantt chart clearly identifies dependencies and milestones. These can be discussed at your interim review. We discussed the online surveys – consult with computing department as they have experience in this area. We discussed the practical methods needed to measure saturation of fats – this needs to be researched as a priority in order to determine access possible on 'lab day', availability of equipment or need to find suitable alternatives.</p>			
<p>Plan approved</p>	<p>Yes</p>	<p>Further work required</p>	
<p>Candidate signature</p>		<p>Date</p>	
<p>Assessor signature</p>		<p>Date</p>	

Science: Interdisciplinary Project

Progress log

Candidate name	Deborah Lindsay								
SCN									
Centre name									
Assessor name									
Project title	Are low fat food products fuelling obesity and diabetes?								
<p><i>Use this form to record progress with your project. Keeping an ongoing record will help prepare you for progress meetings with your teacher/lecturer, your presentation and final evaluation. Things you might want to record are:</i></p> <ul style="list-style-type: none"> <i>what you have done (eg from one week to the next)?</i> <i>what skills have you used and how you feel they have developed?</i> <i>if you are working in a group, what discussions you have had?</i> <i>any changes that you have (or will need) to make to your plans and reasons why</i> <i>what resources you have found/hope to find?</i> <i>any problems you are encountering and how you are resolving them</i> <i>what you are going to do next?</i> 									
Date	<i>(This is an example of a page from Deborah's log)</i>								
Week 5	<p>Comments</p> <p>Now that I have finished collecting my background information I have started to sift through it so that I can prepare my literature review. I have got a lot of information and am not quite sure about the best way to organise/review it. I am going ask Mr MacGregor for suggestions at my meeting next week. I have to think about the implications of delaying the writing of my literature review. I don't think that this will affect the development of the survey questions as I have gained a good understanding of the research material.</p> <p>I met with Miss Johnson to find out about Health week and explained what I would like to do. She was interested in my project and happy with my idea of creating a leaflet and a display board for the first year pupils. Health week is the week before my presentation.</p>								

On Wednesday I met the manager of the local supermarket and he has agreed to allow me to conduct my survey in two weeks time. He is letting me know which two afternoons would suit best. I felt pleased with how the meeting went. I think that I presented my case well and was happy with the way that I negotiated the time to conduct my survey.

The meeting with the supermarket manager was my first 'big' interview. It went really well and I am now feeling much more confident about meeting the medical specialists later.

Didn't realise quite how much organising this will take – will think about ways of planning to get more done in advance/sorting out information.

Science: Interdisciplinary Project

Record of Interim Review to be completed by candidate and assessor

Candidate name	Deborah Lindsay								
SCN									
Centre name									
Assessor name									
Project title	Are low fat food products fuelling obesity and diabetes?								
<p>Describe what you have done so far and how it meets your plan (changes, successes, difficulties encountered, how you resolved issues, targets met)</p> <p>I have carried out my background research and have now started to write my literature review. I delayed writing the literature review because I needed suggestions to help me find the best way to sort out the information that I had found out.</p> <p>Originally I had intended to carry out my experimental work during weeks 11 and 12. Unfortunately, due to unforeseen circumstances, the University were not able to accommodate this. I have arranged to carry out my experimental work in weeks 10 and 11 in school. In order to do this I need to borrow equipment from another school. The Technician has ordered the chemicals I need and is borrowing one piece of apparatus from another school.</p> <p>I have met the supermarket manager and have carried out my surveys in the supermarket. I have started to analyse the results but have still to complete this.</p> <p>I have contacted the medical specialist but was not able to meet with him as he was too busy. He agreed to email me when he returns from his golfing holiday next week. I have met the diabetic nurse at my doctor's surgery. She was really helpful and suggested another website which I have not had the chance to use yet. She gave me some leaflets and was able to answer all of my questions. She said that I could contact her again if I thought of any other questions. I got permission from the diabetic nurse to make an audio-recording of the interview for reference.</p> <p>I have written the online questionnaire on surveymonkey and trialled it with my class mates. I altered some questions following the feedback that they gave me. First year pupils completed the questionnaire during their computing lesson last week. I am still analysing the results.</p>									

I am pleased that online questionnaire produced results. I just need to make sense and draw conclusions from them.

I found out when Health Week is going to be and have arranged to have a display area.

What skills have you used and how far have they developed?

I did an initial self evaluation of skills. I found this helpful in determining which ones I really needed to develop. I was nervous about meeting the supermarket manager but he was very nice. I was much more confident when dealing with the medical specialists and feel that I have developed my communication skills with adults. I had to deal with a setback and go to plan B for experiments which has helped me to further develop my problem solving and planning skills.

I found the information management part of the literature review difficult. Mr MacGregor talked me through some possible solutions and I now feel that I am more skilled in this area.

Next steps

- Finish the analysis of both surveys.
- Prepare for carrying out the food tests week 10 and 11.
- Finish my literature review.
- Think about the structure of my presentation.

Assessor comments

You have made a good start with this project as I have observed through your Log and our regular update meetings. You dealt well with the University – in approach and dealing with a rejection.

You had problems with organising the research but followed all advice given and are now more competent in this area.

You have clear ideas as to your next steps and are following your amended plan well. As discussed, there are no implications as a result of completing your literature review at a later date. You weighed up the pros and cons effectively and considered all options carefully.

Candidate comments

Although disappointed with the set back with the University, I thought I handled it well and was encouraged by their interest in the project. Their links to research areas was a bonus which I can follow up, time permitting.

I am finding this project really interesting and am enjoying getting out of school. I found talking to the parents in my supermarket survey challenging at first but they all showed a real interest in what I was doing. I feel that my communication skills with adults are improving all of the time.

Candidate signature**Date****Assessor signature****Date**

Science: Interdisciplinary Project

Evaluation of project

Candidate name	Deborah Lindsay								
SCN									
Centre name									
Assessor name									
Project title	Are low fat food products fuelling obesity and diabetes?								
<p>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.</p> <p>The aim of my project was to find out if there was a higher sugar content in low fat foods that were contributing to obesity and type II diabetes.</p> <p>The project was successful in that my research showed that low fat foods had a higher sugar content. From my research I also found out that there is a link between obesity and type II diabetes, from this I could infer that there is a link between consumption of high sugar foods and a tendency to type II diabetes.</p> <p>My surveys demonstrated a preference for full fat products in terms of taste but low fat products in terms of healthy thinking. Surveys indicated that people ate larger portion sizes of low fat food in the belief that they were healthier and were unaware of the high sugar content.</p> <p>The online survey indicated that teenagers prefer full fat food to low fat and that this, together with being inactive, would seem to be leading to an increase in obesity in this age group. The supermarket survey indicated that parents who purchase low fat foods were not always aware of the sugar content within them and the implications that this can have.</p> <p>The foods tested showed a higher level of trans fats than expected in the chosen low fat products possibly to improve taste. My research has shown that trans fats can contribute to obesity and type II diabetes.</p> <p>Selecting information that was relevant was hard due to depth of technical knowledge, relevant knowledge and time constraints. However, this was carried out successfully.</p>									

The log really helped me remember what I was doing, but it may have been better using an on-line calendar. I managed to keep to my milestones.

The whole project was a challenge; my previous learning had been far more directed – always given a task to complete and guidance on how to complete it. In the beginning I felt that I had been thrown in at the deep end, but my confidence quickly developed as I made decisions and lead the discussions with Mr MacGregor.

Every time I hit a problem I had sufficient ability to think of alternative options allowing me to re-direct my research.

I learnt there is a lot more to presentations than producing a power point. Talking clearly and engagingly, taking into consideration my target audience in terms of technical and non-technical vocabulary and taking questions from the audience. I have also developed my ability to present information graphically and to present an argument effectively in a limited time.

How effective were my communication methods?

The project plan worked well. I found it valuable to have spent considerable time at the outset developing a spreadsheet incorporating timings, resources and dependencies. Using my plan allowed me to reschedule activities when necessary and still keep within the timeframe.

I had difficulty in arranging access to university faculty for research but was able to put plan B into action and asked the school technician for help. I could not meet with the heart specialist but I overcame this by having an e-mail conversation. The diabetic nurse at my local surgery answered all my questions and provided information about type II diabetes.

A bonus was an opportunistic interview with a teenager with diabetes re diet. I was able to do this 'off the cuff' because I had already done lots of background reading.

I should have planned to carry out the food tests earlier as the first set of results were inconclusive and I had to repeat the experiment.

The information booklet was liked by students and praised by the community health workers who were taking part in our Health week, they have taken some for other events. The school nurse is going to keep copies for her health talk to first year students.

The presentation to the head teacher, tutor, canteen manager, diabetic nurse and local supermarket manager was very well received. The heart specialist was unable to attend my presentation but was pleased to receive a copy of the written report. The taste test confirmed to the audience that full fat options were tastier. The canteen manager has agreed to review menus. Unfortunately the supermarket manager was not interested in passing on my findings.

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

The information leaflet produced could be distributed to all local schools as a first step to reduce obesity and its associated problems.
I would like to investigate the composition of diet products and diabetic products.

Candidate signature	Date	
Assessor signature	Date	

Science: Interdisciplinary Project

Self evaluation of generic and cognitive skills development

Candidate name	Deborah Lindsay								
SCN									
Centre name									
Assessor name									
Project title	Are low fat food products fuelling obesity and diabetes?								

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
<p>Application of subject knowledge and understanding</p> <ul style="list-style-type: none"> • Candidates should think about practical uses for the science(s) they have learned. • 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). • Plan how they can use their knowledge of sciences effectively as part of a successful project. • Use their sciences to help them carry out various aspects of the project. 	<p><i>Note to assessors – candidates should link the bulleted points specifically to the project they have carried out.</i></p>

Research skills – plan, research, analyse and evaluate	
<p>Plan</p> <ul style="list-style-type: none"> • Define your research subject by identifying its scope and key concepts. • Define your research process by identifying tasks and creating a schedule. • Show initiative in choosing methods of research eg contacting companies, surveys, focus groups, experimentation. • Identify and use relevant tools, resources and contacts for your research process. 	<p>I did background research prior to the proposal and produced a spider diagram which focused my thoughts.</p> <p>I produced a planning spreadsheet listing all of the subjects that I needed to look at and also used the spreadsheet to manage the information I had gathered. This is the first time I had collected information in this way and I found it easy to use and would consider using this system in the future.</p> <p>I wasn't sure of the best ways to gather information from external sources so I researched methods of constructing online questionnaires and feel that this helped me to create a good quality questionnaire; I contributed to and used the school's baccalaureate resource list and identified useful sources; I identified the appropriate medical specialists and university faculty and found out how to contact them.</p>
<p>Research</p> <ul style="list-style-type: none"> • Carry out research from a variety of sources. • Keep records and notes on strategies, sources, tools and resources used. • Adopt a referencing methodology (where appropriate). 	<p>I enjoyed accessing research sources that I hadn't used before, but would hope to use again in the future when I attend university.</p> <p>I was good at keeping a log of the information found, contacts I made and research I was using and referenced this where I used it in my project.</p>
<p>Analyse</p> <ul style="list-style-type: none"> • Analyse the usefulness and reliability of materials gathered and resources consulted. • Return to research stage as necessary. 	<p>I required some help from the computing teacher to analyse the information from the online survey. I was able to use the skills gained here to analyse the results from the supermarket survey on my own. There was so much information that I found it challenging to sift through and choose the best.</p> <p>I managed to find enough information in my four weeks of research and did not have to go back to the research stage.</p>
<p>Evaluate</p> <ul style="list-style-type: none"> • Evaluate the research process. 	<p>Overall, I think that my research process was successful – I had difficulty finding computer time in school but was able to do a lot of research at home therefore I managed to keep my plan on schedule.</p>

Interpersonal skills – negotiate and collaborate	
<ul style="list-style-type: none"> • Consider other people's views/ feedback. • Discuss issues of concern, seeking resolution where needed. • Adjust your approach in response to a situation/ environment. • Have positive self belief. • Be confident enough to offer and ask for support. 	<p>I feel that my interpersonal skills have improved while I have been working on this project particularly in dealing with adults for example</p> <p>Negotiation in getting chemistry lab time. When my first experimental results were inconclusive I had to build in more lab time, this involved me carrying out this work during an in-service day. I was aware I needed to be sensitive when interviewing customers in the supermarket and took this into account and therefore was able to gather a lot of information.</p> <p>I was disappointed when I couldn't meet the heart specialist or access University lab and was happy when I negotiated an e-mail conversation and got links to very complex research papers.</p> <p>I now feel I have more of a positive, 'can do' attitude.</p>
Planning – time, resource and information management	
<ul style="list-style-type: none"> • Estimate time needed and set milestones (targets). • Monitor/record progress using tools such as schedules, diaries, logs and calendars to help completion of activities. • Consider any probable barriers to achievement and take steps to minimise them. 	<p>The time spent with the initial planning really helped me to meet milestones and monitor my progress.</p> <p>I updated my log, recording all relevant information, at appropriate times.</p> <p>I had considered contingency plans for the things that I thought could go wrong so I was able to deal with these issues as they happened. I dealt with other problems as they arose. Successfully dealing with these situations has demonstrated that I have improved my problem solving skills.</p> <p>There was so much information that I found it challenging to sift through and choose the best, however I believe that I was successful in doing so.</p>

Independent learning – autonomy and challenge in own learning	
<ul style="list-style-type: none"> • Use my skills responsibly to make things happen. • Take initiative to establish links with other learning environments/opportunities. • Look for challenges and don't necessarily take the easy option. 	<p>Although it was sometimes challenging, I enjoyed taking responsibility for my own project and feel that I was able to carry out the work by myself, although I did have the confidence to ask for help when necessary.</p> <p>I was able to carry out parts of my project outwith the school by arranging meetings with medical specialists and with the supermarket manager.</p> <p>I took the initiative in making contact with the specialists needed to help me carry out my project both in and out of the school.</p> <p>I gave up a day's holiday to come and redo the experimental work and amended survey form feedback.</p>
Problem solving – critical thinking; creative and logical approaches	
<ul style="list-style-type: none"> • Generate and explore ideas to support my project. • Use creative approaches such as lateral thinking. • Use logical, step by step thinking approaches. • Consider how a situation may have arisen and possible contributory factors. • Think critically about possible actions/changes that would improve the situation. • Analyse points of view in source materials in order to support findings from my research eg flaws in the reasoning; relevance; reliability; supporting evidence; credibility of sources of evidence. 	<p>I used my initial thought shower to generate ideas for developing my project.</p> <p>I am pleased I chose to use a gantt chart to plan my project as this helped me to approach it in a logical way and to keep on schedule as I could alter timelines during the course of my project as circumstances changed.</p> <p>I believe I responded well when my experiments didn't work as I thought about the things that had gone wrong and took this into account when I re-did them. I was pleased when they worked out second time around.</p> <p>I confidently overcame the problem with the university when they were unable to accommodate my experimental work by borrowing the necessary equipment from another school.</p> <p>I found it very challenging to work through my literature review, but I took advice on organising my research and believe that the breadth of my literature review allowed me to find reliable evidence to support my findings. In future I would be better organised when looking at that amount of material.</p>

Presentation skills	
<ul style="list-style-type: none"> • Choose appropriate formats and apply effectively eg written, oral, video, multimedia. • Consider my target audience, the layout, structure, degree of formality of my presentation. • Gather, select and include relevant information or ideas, emphasising the main points. • Present information/ideas/reflections with supporting detail in a logical order, reaching a reasoned conclusion. 	<p>I think that I was right to choose a different presentation format for adults and children as the feedback suggested that the information I gave them was appropriate to each group. Although I was initially anxious about giving my presentation I practiced my presentation which gave me the confidence to remember to include all of the key information and deliver my presentation well. The feedback I received allowed me to make changes to the individual slides to make them clearer and easy to understand. The reactions to the final presentation were very good with the canteen manager agreeing to review the school menus. I was really pleased that the leaflet that I produced was of high quality and will be used by the students and the school nurse. The first year pupils found the information leaflet interesting.</p>
Self evaluation – recognition of own skills development and future areas for development	
<ul style="list-style-type: none"> • Ask for feedback and deal positively with praise, setbacks and criticism. • Reflect on my experiences and feedback from others to assess the development of my knowledge, skills and understanding. • Learn from my experiences and use to inform future progress. 	<p>My assessor recommended that I carry out an initial self evaluation of skills that require further development. I found this quite difficult as I had not done anything like this before. However completing this process was useful as it allowed me to identify my strengths and weaknesses. During the project I was able to refer back to this to check my progress and monitor my development. I intend to carry out this process in future.</p>

This section is not mandatory. It has been included to allow the candidate the opportunity to undertake an overall reflection of their project.

Reflection on my experiences throughout this project (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).

I have learned that I can work independently to complete a given task. This will be very useful to me at University. I am proud of my leaflet and pleased that my project has produced useful information to improve the health of younger pupils. I would have liked more time and access to a research group to investigate further the composition of fats in my chosen foods. I enjoyed working with the medical specialists and this has confirmed my choice of future career.

Are there any skills that you have used in this project that you would like to develop further? (for example, using skills in even more challenging situations, more working on own, more team working).

I would like to develop all of my skills further and will get the opportunity to do this when I am studying dietetics.

Science: Interdisciplinary Project

Assessment checklist

Candidate name Deborah Lindsay

Candidate number _____

Centre _____

Project proposal	Tick as appropriate
Grade C criteria	
Clear aims and reasoned arguments to support the relevance and practicability of the project.	✓
Identification of opportunities for:	✓
• own skills development	✓
• collaborative working	✓
• accessing less familiar learning environments	✓
• application of science subject knowledge in a broad context	✓
• use of knowledge and skills across different disciplines	✓
• making connections between subject knowledge and the wider world.	✓
Grade A criteria, includes all of above plus	
Well conceived proposal which sets creative and challenging goals which are at the same time realistic, achievable and practicable.	✓
Robust and carefully argued justification of the proposal.	✓
Substantial links and understanding of possible connections across disciplines contributing to the project.	✓

Project plan	Tick as appropriate
Grade C criteria	
Development of clear project objectives in line with the project proposal.	✓
Relevant and detailed planning strands to enable the project to be implemented, monitored, presented and evaluated.	✓
Realistic timescales and achievable milestones for each stage of the project.	✓
Clear identification of resources needed, research methodologies to be used, opportunities for support and feedback.	✓
Grade A criteria, includes all of above plus	
Careful selection and effective use of research/investigation techniques.	✓
Anticipation of probable and possible factors which may impact on the project.	✓
Clear identification of dependencies or reliance on the success of other strands of work and of necessary adjustments to the plan.	✓
Outline the process for achieving own identified development needs.	✓

Presentation of project findings/product	Tick as appropriate
Grade C criteria	
Evidence of effective and critical use of: resources, research methodologies, information and time management, prioritisation, problem solving approach to reach objectives, feedback, collaborative approaches, self monitoring.	✓
Application of specialist and interdisciplinary subject knowledge to establish meaningful connections within the broad theme.	✓
Clear presentation of main findings/product.	✓
Grade A criteria, includes all of above plus	
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.	✓
Skilful and creative use of resources, including people, information and learning contexts to progress the project.	✓
Accurate and deepening of understanding through application of subject knowledge in the chosen context, with meaningful connections well established.	✓

Evaluation of project	Tick as appropriate
Grade C criteria	
A critical and justified evaluation of all stages of the project process: planning, implementation and findings/product in terms of strengths, weaknesses and learning points.	✓
Effective use of chosen communication method(s).	✓
Grade A criteria, includes all of above plus	
Incisive, well balanced evaluation of the project outcome against project aims, supported convincingly by well selected evidence.	✓
Careful choice and skilful use of communication and presentation methods(s).	✓

Self evaluation of generic/cognitive skills development	Tick as appropriate
Grade C criteria	
A critical evaluation of own skills development against the list of specified generic/cognitive skills.	✓
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.	✓
Grade A criteria, includes all of above plus	
Insightful, balanced and well structured self evaluation of own development.	✓
Assertive and justified use of feedback from others in evaluation and identification of development areas.	✓

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.

Overall grade awarded	A	B	C	Unsuccessful
<p>Assessor comments</p> <p>You demonstrated that you are very capable at working independently during all stages of this project. You managed all strands of the project effectively and coped well with the complex nature of the information that you dealt with.</p> <p>You managed your timing well and the planning stage of the project had clearly been very effective.</p> <p>You showed a mature approach throughout this project and your confidence and self-esteem have grown.</p> <p>You display attributes which will stand you in good stead in your chosen career.</p> <p>Your presentation was interesting and informative and was well received by the audience. You made a valuable contribution to Health Week.</p> <p>You have shown a high degree of autonomy throughout this project and have met all of the Grade A criteria effectively.</p>				

Assessor signature _____

Date _____

Internal verifier signature _____

Date _____

Project 1 – Example of Grade C

Science: Interdisciplinary Project

Proposal

Candidate name	Emma Stewart								
SCN									
Centre name									
Assessor name									
Project title	Are low fat food products fuelling obesity and diabetes?								
<p>Project outline (what it is I want to do and how will I go about it)</p> <p>I want to find out if low fat food products are causing an increase in obesity and diabetes.</p> <p>I propose to investigate the contents of low fat foods and compare them with other products. I will research the causes and effects of diabetes and will carry out a survey of eating habits of 1st year pupils.</p> <p>I will present my findings to my tutor and classmates.</p> <p>I aim to finish my project by February.</p>									
<p>Reasons for choosing this project (eg personal interest, future plans, links to other subjects I am studying/have studied)</p> <p>Obesity is very topical and many young people are always concerned about their weight.</p> <p>I would like to go to University to study nutrition and would like to develop my technical and interpersonal skills to help me in the future.</p> <p>I am studying Biology and Chemistry at Advanced Higher and want to take my studies further through my project.</p>									
<p>The broad contexts this project will cover are:</p> <p> <input checked="" type="checkbox"/> Citizenship <input checked="" type="checkbox"/> Employability <input type="checkbox"/> Enterprise <input type="checkbox"/> Economic development <input type="checkbox"/> Sustainable development </p>									
<p>Learning environments I will access are:</p> <p>I propose to carry out a survey with all S1 pupils and do a survey of low fat products in the local supermarket.</p> <p>I will do research on diabetes and obesity through online communities.</p>									

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

Application of subject knowledge and understanding.
Research skills – analysis and evaluation.
Interpersonal skills – negotiation and collaboration.
Planning – time, resource and information management.
Independent learning – autonomy and challenge in own learning.
Problem solving – critical thinking: logical and creative approaches.
Presentation skills.
Self evaluation – recognition of own skills development and future areas for development.

Assessor comments

Good title and your justification is acceptable.
As it stands your outline does not quite meet the project requirements.

- You need to think more about how you are going to access different learning environments.
- What skills are you going to develop/improve?
- How are you going to provide yourself with opportunities to develop these skills throughout your project?
- Your only activities are research and a survey. What other activities could you do perhaps using your science knowledge to help you answer the question in your title?

Proposal approved	NO	Further work required	YES
Candidate signature	Date		
Assessor signature	Date		

Science: Interdisciplinary Project

Proposal – resubmission

Candidate name	Emma Stewart								
SCN									
Centre name									
Teacher/lecturer name									
Project title	Are low fat food products fuelling obesity and diabetes?								
Project outline (what it is I want to do and how will I go about it)									
<p>I want to find out if low fat food products are causing an increase in obesity and diabetes.</p> <p>I propose to investigate the contents of low fat foods and compare them with similar full fat food products.</p> <p>I will research the causes of different types of diabetes and how they affect the body using the internet. I propose to carry out a survey of eating habits of 1st year pupils and include a section for parents to complete on buying habits. I will also carry out a focus group as part of my survey. I will interview the canteen manager to find out how menus are planned and what thought is given to healthy eating. I will also carry out analysis of the carbohydrate content of a selection of popular low snack foods.</p> <p>I will present my findings to my tutor and classmates.</p> <p>I aim to finish my project by February.</p>									
Reasons for choosing this project (eg personal interest, future plans, links to other subjects I am studying/ have studied)									
<p>Obesity is very topical and many young people are concerned about their weight. I myself, am particularly interested in nutrition, I wish to maintain a healthy lifestyle.</p> <p>I would like to go to University to study nutrition and would like to develop my technical and interpersonal skills to help me in the future.</p> <p>I am studying Biology and Chemistry at Advanced Higher and want to take my studies further through my project.</p>									

The broad contexts this project will cover are

- Citizenship Employability Enterprise
 Economic development Sustainable development

Learning environments I will access are

I propose to carry out a survey with all S1 pupils asking questions about their eating habits in terms of sugar intake. I will extend this survey to include a section for them to take home, asking parents about food buying habits. I will also survey/research the sugar content of popular low fat food products in the local supermarket. I will research how to carry out carbohydrate analysis.

I will do research online and in the local college library on obesity and types of diabetes and the effects these have on the human body.

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

Application of subject knowledge and understanding – I am studying Biology and Chemistry at Advanced Higher and want to take my studies further through my project.

Research skills – analysis and evaluation - I am looking forward to improving my research skills because I think it will be good for university.

Interpersonal skills – negotiation and collaboration – To complete the project I intend to speak to a variety of professional people and undertake surveys which I have not done before.

Planning – time, resource and information management – I think this is an area where I don't need much development.

Independent learning – autonomy and challenge in own learning – I haven't really worked by myself before and am looking forward to the challenge.

Problem solving – critical thinking – logical and creative approaches – This is an area where I feel quite confident but I am sure there is room for improvement.

Presentation skills – I did presentations in my higher courses last year and am looking forward to building on this.

Self evaluation – recognition of own skills development and future areas for development – I have highlighted some of the skills I want to develop above and plan to record them in my progress log.

Assessor comments

A good title and your justification is acceptable and your outline now meets the project requirements. Good plan to use the local college library.

You have set your project within citizenship and employability.

You have widened the opportunities for developing skills by working with other people and extending your intended survey.

You are aware what skills you can develop and where there are opportunities to do so.

I would recommend that you carry out an initial self evaluation of skills to highlight areas that need further development.

In our discussion you have highlighted some literature and online resources you are going to use in your research. The scale of your intended activities is very wide, though I still have some concerns about the range.

Proposal approved	Yes	Further work required	
Candidate signature			Date
Assessor signature			Date

Science: Interdisciplinary Project

Plan

Candidate name	Emma Stewart								
SCN									
Centre name									
Teacher/lecturer name									
Project title	Are low fat food products fuelling obesity and diabetes?								
<p>Is this a group project? yes <input type="checkbox"/> no <input checked="" type="checkbox"/></p> <p>If a group project, what will your role or responsibilities be?</p>									
<p>Timescales (start, finish and milestones)</p> <p>I am going to carry out the project within 20 weeks. I have broken the project down into stages and listed them below – including the important timings and milestones. My milestones are identified at the end of each section of the project.</p>									
<p>Planning – state how you are going to meet the agreed objectives of your project</p> <p>There are several important stages in my project.</p> <p>Background research – (weeks 1-6)</p> <p>Find out what information is available (week 1) Collect, review, organise and store the information (week 2-4) Write up my review (to be finished by the end of week 6)</p> <p>Surveys (weeks 1-13)</p> <p>S1 questionnaire (weeks 5-13)</p> <p>Get permission to conduct surveys with S1 pupils and their parents (week 5) Write questionnaire and get it checked (week 5-6) Try out the questionnaire on friends and their parents (week 7) Get the questionnaire completed (week 9-10) Analyse results (week 10-13)</p> <p>Supermarket survey (weeks 1-10)</p> <p>Contact supermarket and get agreement to do some research there (week 1) Write questionnaire/survey sheet (week 5-6) Carry out survey (weeks 7-8) Analyse results (week 9)</p>									

School canteen manager (weeks 4-6)

Arrange meeting with her (week 4)
Write questions (week 4)
Interview her (week 5)
Write up interview (week 6)

Practical work (week 1-13)

Organise time in lab (week 1)
Find out about experiments (week 1-3)
Buy the foods that I need (week 11)
Do the practicals (weeks 11-12 – hopefully)
Write up and analyse results (weeks 12-13)

Presentation (weeks 14-19)

Sort out a date for the presentation (week 14)
Invite audience (week 14)
Write presentation (week 18)
Practice presentation (week 19)
Give presentation (week 19)

Report (weeks 14-18)

Gather and analyse all of my findings (week 14-15)
Write report (week 15-18)

Review and Evaluation

Conduct self-evaluation (week 1)
Meetings with tutor (every other week)
Interim review (week 10)
Evaluation of project (week 20)

Resources (people, materials, places)

S1 pupils and their parents to complete survey
Local supermarket to carry out research on low fat foods
Chemistry lab to conduct food tests
Foods for testing
Equipment for testing – has the school got the stuff that I need?
Canteen manager for interview
University library
Online libraries
College library

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

Review of literature

Written questionnaire to be completed by pupils at school and parents at home

Survey of low fat foods in the supermarket – to be completed by me

Experiments on food tests in chemistry lab

Presentation

- **Who do I think will benefit from listening/reading/looking at my presentation of my project findings/product?**

Pupils and their parents. The school canteen manager.

- **What methods are appropriate to the audience (for example demonstration, presentation software, websites, oral, report, piece of theatre, dvd, wiki/blog or any combination)**

I am going to write a report on all of my research methodologies and findings and give an oral presentation. I am going to give my oral presentation to my classmates.

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

I need to make sure that I have gathered background information before I write my questionnaires and plan my experimental investigations.

Contingencies

Any anticipated problems?

The supermarket won't let me do a survey.

My timings don't work.

My plans for overcoming the anticipated problems

I will see what I can find out on the internet about food.

I will have to keep a close eye on my plan to make sure that I finish in time.

Method for recording own skills development and future areas for improvement

I'm going to use the progress log to keep track of everything that I have done.

Assessor comments

The plan details the activities that you plan to undertake in order to support your proposal.

You have outlined strands to the project and indicated your proposed timescales for the different activities. You seem to have spread the activities out throughout the time available but the way that you have written your plan makes it difficult to see where they may be bottlenecks which could have an impact on your plan. You were confident in discussing your plan but I am not sure that you have really thought through all of the possible dependencies within your plan. As we discussed, use of a Gantt chart, rather than a list of activities, may be helpful.

You have included time for evaluation and review.

You have given an indication of the resources that you will need and the methodologies that you plan to use in order to achieve your objectives.

Our discussion indicated that you have given some thought to the different research methodologies that you are planning to use.

You have thought a bit about achieving your skills development but I think that you would benefit from thinking in a little more detail about **how** you are going to do this. Let's keep an eye on this as you work through things.

Plan approved	Yes	Further work required	
Candidate signature			Date
Assessor signature			Date

Science: Interdisciplinary Project

Progress log

Candidate name	Emma Stewart								
SCN									
Centre name									
Assessor name									
Project title	Are low fat food products fuelling obesity and diabetes?								
<p><i>Use this form to record progress with your project. Keeping an ongoing record will help prepare you for progress meetings with your teacher/lecturer, your presentation and final evaluation. Things you might want to record are:</i></p> <ul style="list-style-type: none"> • <i>what you have done (eg from one week to the next)?</i> • <i>what skills have you used and how you feel they have developed?</i> • <i>if you are working in a group, what discussions you have had?</i> • <i>any changes that you have (or will need) to make to your plans and reasons why</i> • <i>what resources you have found/hope to find?</i> • <i>any problems you are encountering and how you are resolving them</i> • <i>what you are going to do next?</i> 									
Date	<p><i>(This is an example of a page from Emma's log)</i></p> <p>Comments</p> <p>Week 5</p> <p>I've collected all of my information for my literature review. I am going to ask for help so that I know how to write it all up – there is a lot of info. I have tried to see the school canteen manager but she has been busy whenever I have contacted her. I need to try and organise this soon. I have started to think about the questionnaires that I want to give the S1 pupils. I have got some ideas for questions that I want to ask but still need to find some more. I still have to find out if I can give the S1's the questionnaire – and also, how I am going to do it.</p> <p>Everything is starting to get busy now and I am feeling a bit lost. I need to ask for help to get me more organised. I should be doing lots of different things now and I am finding that I am stuck and not sure where to begin.</p>								

Science: Interdisciplinary Project

Record of Interim Review to be completed by candidate and assessor

Candidate name	Emma Stewart								
SCN									
Centre name									
Assessor name									
Project title	Are low fat food products fuelling obesity and diabetes?								
Describe what you have done so far and how it meets your plan (changes, successes, difficulties encountered, how you resolved issues, targets met)									
<p>I have finished and written my literature review. I needed quite a bit of help to organise the information and also to help me to understand some of the things that I found as technically it was highly complex.</p> <p>I finally spoke to the canteen manager and she gave me information about how they plan the menus. She said that she would like to hear about the results of my research when it is finished. It was difficult to get in touch with her to start with. I learnt that I need to organise meeting times with several options, well in advance. I have now done this with the manager of the supermarket rather than just turn up and expect her to be able to see me straight away.</p> <p>I was a bit late getting my questionnaires ready for the S1 pupils. I thought that it was going to be easy but found that it was difficult to get questions that would give me the information that I wanted. I should have got permission to hand out the questionnaires earlier. Luckily the teachers were able to help and I am starting to get replies.</p> <p>The supermarket manager has said that I can go this week instead of week 7-8. This is later than I had planned but I don't think that it will affect my project.</p> <p>I am still planning to do the experimental work in a couple of weeks. The Chemistry teacher has been really helpful and sorted out lots of stuff for me. I have ordered what I need through the technician, well in advance.</p>									

What skills have you used and how far have they developed?

I have done my initial self evaluation. I seemed to be good at most things but thinking about the first few weeks I think that I need to improve my communication skills and organisation skills more. I needed quite a bit of help with the literature review and put off contacting the canteen manager and supermarket because I was nervous. I have learnt that I need to get on and do things so I feel that my skills have developed. I am getting better at taking things on myself and not relying on teachers to organise things. This has involved thinking ahead about what needs to be done and arranging to do it eg ordering chemicals/apparatus for testing in time for it to be checked and get back when borrowed from another school .

Next steps

I have got to get the rest of the surveys back and analyse the results. I also have to go to the supermarket to do my research there and get myself ready for the practicals. I then have to think about my report and the presentation.

Candidate comments

I am enjoying this more than I thought that I would. I found it difficult to get started but now think that I have a good idea of what I am trying to do.

Assessor comments

You have made a good start and I think that you have been fair with your comments about your progress. I was pleased with the way that you responded to the advice/help that you were given and feel that your skills have developed quite a bit. It is important that you plan your next steps carefully. You have a lot left to do and will need to be well organised and structured in the way that you work.

Make sure that you keep your Progress Log up to date and include as much detail as you can about the planning that you are doing.

Candidate signature**Date****Assessor signature****Date**

Science: Interdisciplinary Project

Evaluation of project

Candidate name	Emma Stewart								
SCN									
Centre name									
Assessor name									
Project title	Are low fat food products fuelling obesity and diabetes?								
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.									
<p>The aim of my project was to establish a link between obesity and diabetes and low fat foods.</p> <p>From my research I found that there is a link between obesity and type II diabetes and it can therefore be concluded that there is a link between a high sugar diet and obesity and type II diabetes.</p> <p>Through my surveys I found out that First year pupils prefer not to eat low fat foods. Parents however are more likely to buy them as they think they are healthier. There is little reliable evidence of what constitutes 'low fat' which may complicate findings.</p> <p>I was disappointed with my experimental work as I could not find a test which was easy to carry out in school or in college. It was difficult to draw any conclusions from the results.</p> <p>In my interview with the canteen manager I found out that a lot of thought goes into the construction of menus and that they try to cater for a wide variety of tastes, including low fat options.</p> <p>I have learned a lot about what skills I have and how I can develop them and I know that this will be useful to me in the future.</p> <p>Selecting information that was relevant was hard due to depth of technical knowledge, relevant knowledge and time constraints. I required support from my teacher to do this.</p>									

The log really helped me remember what I was doing, may have been better using an on-line calendar.

The whole project was a challenge; my previous learning had been far more directed – always given a task to complete and guidance on how to complete it. In the beginning I felt that I had been thrown in at the deep end, but my confidence quickly developed as I made decisions and lead the discussions with my teacher.

I learnt there is a lot more to presentations than power point. Talking clearly and engagingly, taking into consideration my target audience in terms of technical and non-technical vocabulary and taking questions from the audience. This is an area of the project that I felt was carried out really well.

How effective were my communication methods?

My project plan was good, but I had difficulty sticking to my milestones. I carried out a lot of research online and collected a lot of information which I then had to sort through – this was time-consuming. I should have narrowed down my field by focusing on a few key words.

I put off contacting the supermarket manager till week 4 and this had a knock on effect to the rest of my research there. I should have contacted him in week 1, like I said I would. I enjoyed working with the First year pupils and carrying out the questionnaire. I did not realise the volume of information it would generate and should have left more time to deal with it all.

My presentation went very well, but I probably spent too long working on my slides.

I have good communication skills but I need to work on my confidence in dealing with adults I am not familiar with.

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

If I had had more time, I would have liked to have interviewed some health professionals, especially to find out more about Type II diabetes and its affects on the human body.

I also would have liked to have produced an information booklet for First year pupils to inform them more about the dangers of a high sugar diet.

Candidate signature	Date	
Assessor signature	Date	

Science: Interdisciplinary Project

Self evaluation of generic and cognitive skills development

Candidate name	Emma Stewart								
SCN									
Centre name									
Assessor name									
Project title	Are low fat food products fuelling obesity and diabetes?								

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
Application of subject knowledge and understanding	
<ul style="list-style-type: none"> • Candidates should think about practical uses for the science(s) they have learned. • 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). • Plan how they can use their knowledge of sciences effectively as part of a successful project. • Use their sciences to help them carry out various aspects of the project. 	<p><i>Note to assessors – candidates should link the bulleted points specifically to the project they have carried out.</i></p>

Research skills – plan, research, analyse and evaluate	
<p>Plan</p> <ul style="list-style-type: none"> • Define your research subject by identifying its scope and key concepts. • Define your research process by identifying tasks and creating a schedule. • Show initiative in choosing methods of research eg contacting companies, surveys, focus groups, experimentation. • Identify and use relevant tools, resources and contacts for your research process. 	<p>I initially struggled with this and needed help from my tutor to get me started when writing the plan of activities. I found it quite difficult to work out how to use the time that I had effectively. It was all done but rushed at times.</p>
<p>Research</p> <ul style="list-style-type: none"> • Carry out research from a variety of sources. • Keep records and notes on strategies, sources, tools and resources used. • Adopt a referencing methodology (where appropriate). 	<p>I used the local main college library and online resources to capture a variety of information and am pleased I did this as it gave me access to a variety of different opinions.</p> <p>I needed help from my tutor to organise the information collected from my survey. Taking my tutors advice I used electronic folders to sort and store this information and found it very helpful.</p>
<p>Analyse</p> <ul style="list-style-type: none"> • Analyse the usefulness and reliability of materials gathered and resources consulted. • Return to research stage as necessary. 	<p>I found analysing the information difficult as some of it was gathered from medical journals, so although the information was reliable it was highly complex and there was so much of it. I spoke to my tutor to help me understand some of the information.</p>
<p>Evaluate</p> <ul style="list-style-type: none"> • Evaluate the research process. 	<p>The research process was time consuming – I should have searched by focusing on keywords.</p>

Interpersonal skills – negotiate and collaborate	
<ul style="list-style-type: none"> • Consider other peoples' views/feedback. • Discuss issues of concern, seeking resolution where needed. • Adjust your approach in response to a situation/environment. • Have positive self belief. • Be confident enough to offer and ask for support. 	<p>I think I was good at considering other peoples' views as I trialled my questionnaire with my classmates and parents and adjusted it after considering their feedback and discussing with my tutor whether it met my aims.</p> <p>I was pleased about overcoming my nerves and being able to negotiate a meeting with the canteen manager, however I realised that I should have approached the supermarket manager earlier to ask permission to take notes on contents of various products.</p> <p>I asked my tutor for help when I needed it.</p>
Planning – time, resource and information management	
<ul style="list-style-type: none"> • Estimate time needed and set milestones (targets). • Monitor/record progress using tools such as schedules, diaries, logs and calendars to help completion of activities. • Consider any probable barriers to achievement and take steps to minimise them. 	<p>I underestimated the time it would take to carry out the survey and collate the results but still managed to get this done.</p> <p>I was good at keeping a detailed log of all activities.</p> <p>I dealt with problems as they arose but should have foreseen some of them and thought of alternatives, I may have been able to do this if I had used a Gantt chart so would try this in future.</p>
Independent learning – autonomy and challenge in own learning	
<ul style="list-style-type: none"> • Use my skills responsibly to make things happen. • Take initiative to establish links with other learning environments/opportunities. • Look for challenges and don't necessarily take the easy option. 	<p>The literature research part of the project went really well and I was pleased with how I worked on my own to gather the information.</p> <p>I enjoyed accessing the College library and the supermarket to get additional information and interviewed the school canteen manager.</p> <p>It would have been good if I had gone to the hospital/doctors to find things out but it wasn't in my original plan and I ran out of time to add anything extra in.</p>

Problem solving – critical thinking; creative and logical approaches	
<ul style="list-style-type: none"> • Generate and explore ideas to support my project. • Use creative approaches such as lateral thinking. • Use logical, step by step thinking approaches. • Consider how a situation may have arisen and possible contributory factors. • Think critically about possible actions/changes that would improve the situation. • Analyse points of view in source materials in order to support findings from my research eg flaws in the reasoning; relevance; reliability; supporting evidence; credibility of sources of evidence. 	<p>I was very pleased with the analysis that I did of all of my research findings. It helped me to give a really good presentation.</p> <p>I could have thought more creatively about how to get information about low fat foods and obesity. I stuck to my original plan but could have changed some more things along the way to improve the quality of my overall findings. I thought that my plan was logical and gave me the structure that I needed to make sure that I completed it on time.</p>
Presentation skills	
<ul style="list-style-type: none"> • Choose appropriate formats and apply effectively eg written, oral, video, multimedia. • Consider my target audience, the layout, structure, degree of formality of my presentation. • Gather, select and include relevant information or ideas, emphasising the main points. • Present information/ideas/reflections with supporting detail in a logical order, reaching a reasoned conclusion. 	<p>I feel my presentation skills are good and I produced a good report and slide presentation, though I could have invited the Canteen manager and some S1 pupils.</p>

Self evaluation – recognition of own skills development and future areas for development	
<ul style="list-style-type: none"> • Ask for feedback and deal positively with praise, setbacks and criticism. • Reflect on my experiences and feedback from others to assess the development of my knowledge, skills and understanding. • Learn from my experiences and use to inform future progress. 	<p>I used feedback to redo my questionnaire, making it more focused.</p> <p>I respond positively to criticism, when I feel it is justified.</p> <p>I hope to use my experiences to help with my studies at university, especially in planning and organising projects, reading complex and conflicting arguments in documents.</p>
<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>Reflection on my experiences throughout this project (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>I have learned to work more independently and that it is important to remain focused on my objective. I now realise that there are many other aspects that I could have included in my project eg the impact of physical activity. I could also have thought about using the local doctors and nurses to get information about obesity and diabetes. They might have been able to give me some information that would have linked my project to the local community.</p> <p>Are there any skills that you have used in this project that you would like to develop further? (for example, using skills in even more challenging situations, more working on own, more team working).</p> <p>I would like to further develop my planning skills, especially time management. I would also like to develop my interpersonal skills by working with other people more. I would also like to try to learn about coming up with creative ways of solving problems and getting a bit better at developing more novel ideas.</p>	

Science: Interdisciplinary Project

Assessment checklist

Candidate name Emma Stewart

Candidate number _____

Centre _____

Project proposal	Tick as appropriate
Grade C criteria	
Clear aims and reasoned arguments to support the relevance and practicability of the project.	✓
Identification of opportunities for:	✓
• own skills development	✓
• collaborative working	✓
• accessing less familiar learning environments	✓
• application of science subject knowledge in a broad context	✓
• use of knowledge and skills across different disciplines	✓
• making connections between subject knowledge and the wider world.	✓
Grade A criteria, includes all of above plus	
Well conceived proposal which sets creative and challenging goals which are at the same time realistic, achievable and practicable.	
Robust and carefully argued justification of the proposal.	
Substantial links and understanding of possible connections across disciplines contributing to the project.	

Project plan	Tick as appropriate
Grade C criteria	
Development of clear project objectives in line with the project proposal.	✓
Relevant and detailed planning strands to enable the project to be implemented, monitored, presented and evaluated.	✓
Realistic timescales and achievable milestones for each stage of the project.	✓
Clear identification of resources needed, research methodologies to be used, opportunities for support and feedback.	✓
Grade A criteria, includes all of above plus	
Careful selection and effective use of research/investigation techniques.	
Anticipation of probable and possible factors which may impact on the project.	
Clear identification of dependencies or reliance on the success of other strands of work and of necessary adjustments to the plan.	
Outline the process for achieving own identified development needs.	

Presentation of project findings/product	Tick as appropriate
Grade C criteria	
Evidence of effective and critical use of: resources, research methodologies, information and time management, prioritisation, problem solving approach to reach objectives, feedback, collaborative approaches, self monitoring.	✓
Application of specialist and interdisciplinary subject knowledge to establish meaningful connections within the broad theme.	✓
Clear presentation of main findings/product.	✓
Grade A criteria, includes all of above plus	
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.	
Skilful and creative use of resources, including people, information and learning contexts to progress the project.	
Accurate and deepening of understanding through application of subject knowledge in the chosen context, with meaningful connections well established.	

Evaluation of project	Tick as appropriate
Grade C criteria	
A critical and justified evaluation of all stages of the project process: planning, implementation and findings/product in terms of strengths, weaknesses and learning points.	✓
Effective use of chosen communication method(s).	✓
Grade A criteria, includes all of above plus	
Incisive, well balanced evaluation of the project outcome against project aims, supported convincingly by well selected evidence.	
Careful choice and skilful use of communication and presentation methods(s).	✓

Self evaluation of generic/cognitive skills development	Tick as appropriate
Grade C criteria	
A critical evaluation of own skills development against the list of specified generic/cognitive skills.	✓
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.	✓
Grade A criteria, includes all of above plus	
Insightful, balanced and well structured self evaluation of own development.	
Assertive and justified use of feedback from others in evaluation and identification of development areas.	

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.

Overall grade awarded	A	B	Ⓒ	Unsuccessful
Assessor comments				
<p>You worked well independently producing an informative and interesting presentation and giving a competent performance across all 5 criteria.</p> <p>You thought through the timescales but your time management could have been better. You could also have better anticipated some of the problems you met.</p> <p>You evaluated your initial skills well but overstated progression of these skills during the project.</p> <p>While you showed a mature attitude, you lacked confidence in dealing with the broader contexts of the project.</p> <p>Interdisciplinary connections as demonstrated in the presentation could have been stronger although you discussed possible ways to improve these, you did not take them forward.</p> <p>Overall a competent project, which met all the grade C criteria.</p>				

Assessor signature _____

Date _____

Internal verifier signature _____

Date _____

Project 2 – Example of a Grade A

Science: Interdisciplinary Project

Proposal

Candidate name	Adam Miller								
SCN									
Centre name									
Assessor name	Mr Smith								
Project title	How can wind power contribute to power supply at local level?								
Project outline (what it is I want to do and how will I go about it)									
<p>This project will investigate the feasibility of using wind generators to provide energy needs for homes in the local area. Technologically the investigation would attempt to establish a link between the energy requirement and the scale of the turbine(s) necessary to meet the requirement. The following groups will be consulted: wind generator designers and manufacturers, community action groups, environmental groups, local builders and local authority planners.</p>									
Reasons for choosing this project (eg personal interest, future plans, links to other subjects I am studying/ have studied)									
<p>I have chosen this project because I am studying Advanced Higher Technological Studies and studied Geography and Biology last year. I am interested in the environment and renewable energies and hope to study Engineering at University next year. I want to improve my communication skills so that I will be confident when delivering my findings to an audience. I also need to develop my research skills because my previous courses did not involve much research or discussion with professionals outside education. This topic is important to everybody because we need to consider alternative energies as a means of reducing our dependency on fossil fuels. I also recognise a need to develop an understanding of the commercial and economic considerations which may act as constraints on engineering projects.</p>									
The broad contexts this project will cover are									
<input type="checkbox"/> Citizenship <input type="checkbox"/> Employability <input type="checkbox"/> Enterprise <input checked="" type="checkbox"/> Economic development <input checked="" type="checkbox"/> Sustainable development									

Learning environments I will access are

University library
Engineering department at university
Wind turbine company
On-Line Internet/Blogs/Web Conferencing/tutorials.

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 Geography and Biology and combine this with the knowledge that I will gain from my Advanced Higher Technological Studies.

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 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. I will make use of an e-portfolio in order to manage all my information.

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 my plans have to be changed.

Presentation skills – I will develop my presentation skills by contributing to blogs. I will also need good presentation skills when I discuss/negotiate with my teacher and those people I have to speak to outwith school. I have already attended a presentation skills course and I will make use of what I have learned.

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

Prepared documentation was brought to the meeting. This documentation was presented very clearly showing a high level of preparation.

- You demonstrated a clear understanding of all the project information provided during induction.
- You showed that the cognitive and generic skills essential to this unit have been considered and interpreted correctly, and used a power point presentation to list these and where each may be used during the course of your proposed project.
- You clearly demonstrated that there is scope in this topic to explore engineering principles at a depth comparable to AH level of study and beyond in Tech Studies, Mathematics, Physics.
- The goals presented are realistic and have the potential to provide challenge for you.

In discussion you were able to identify key issues that would arise in the planning stage.

This project proposal is realistic and achievable.

Proposal approved	YES	Further work required	NO
Candidate signature	Date		
Assessor signature	Date		

Science: Interdisciplinary Project

Plan

Candidate name	Adam Miller								
SCN									
Centre name									
Teacher/lecturer name	Mr Smith								
Project title:	How can wind power contribute to power supply at local level?								
<p>Is this a group project? yes <input type="checkbox"/> no <input checked="" type="checkbox"/></p> <p>If a group project, what will your role or responsibilities be?</p>									
<p>Timescales (start, finish and milestones)</p> <p>Gantt Chart attached showing my timescales building in slippage/review time. By the October holiday at the latest my project should be ready for Implementation. By Christmas I should have enough knowledge to be able to discuss at a technical level how wind generators function to meet my project requirements. Presentation in March.</p>									
<p>Planning – state how you are going to meet the agreed objectives of your project</p> <p>Following on from initial research and energy conference experience I will need to contact and arrange meetings with the following.</p> <ul style="list-style-type: none"> • Engineering department following on from University open day – to discuss the best way to establish the link between energy requirement and turbine scale necessary to the requirement. • A National House Building company to arrange a visit or web conference – to gauge the interest that a national building company has in integrating power supply in planning for developments; do they see any financial benefit? • An energy company to arrange a visit to a wind farm – to establish the proportions of the market that large medium and small scale generators currently account for and see what the technology looks like! • An energy company overseas to arrange a Web Conference – as above but to compare different company views. • Primary school with wind generator – why did they do this, does it work? • Wind farm – to see if I can obtain information about how the energy generation profile varies over a year and how much noise there is when they are in operation. 									

- Environmental group interested in alternative energies – canvas their views on the use of wind generators, both small and large scale.
- Planning Offices – to find out if there are any planning restrictions on building generators near housing and any financial incentives offered to developers and/or individual house holders to use wind generators.

As I collect information following initial contact with the various organisations I will start to extract relevant information required in order to move the project on.

Resources (people, materials, places)

Prior to starting the project I attended a presentation skills seminar. I need to find out whether Careers Scotland run any courses or whether there are any on-line tutorials that would help with the generic skills I need to develop to carry out this project.

Sign up for access to the local university library using a letter from the pupil support department.

Discuss with my tutor the paperwork that needs to be completed before visits to companies.

Find out if any school protocol exists for the organisation of contact with external agencies – letter head, email from school office or can I use my personal email account.

Software that might need to be accessed. Find out whether this can be installed on the school computer systems.

Website access – can websites be made available for research during the school day or do I need to access elsewhere.

Arrange meeting schedule with:

- Mr Smith my tutor to discuss progress
- outside organisations listed above.

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

Web searches relating to the technical detail of Wind generators. Collate relevant information and disregard non-essential findings.

Contribute to blogs relating to the development of wind generators and their use in housing. Try to gain information from households on the economic effectiveness of their investment in individual turbines for houses.

Ask questions of experts and use their response to direct subsequent work on the research and analysis of the technological aspect of the project.

Visit the university library for further documented reports on wind generators.

Plan visits in December to companies and organisations identified above. Record interviews and subsequent transcription; create a bank of photographic evidence.

Presentation

- **Who do I think will benefit from listening / reading / looking at my presentation of my project findings/product?**

My audience will be the Higher Technological Studies class, the head teacher and depute in charge of curriculum along with my tutor. I have been given 30 minutes to present my project including questions.

- **What methods are appropriate to the audience (for example demonstration, presentation software, websites, oral, report, piece of theatre, dvd, wiki/blog or any combination)**

The delivery of the presentation will be using a Power Point presentation.

This will include the project title, objectives, the main technological findings, how the project was planned, critical learning points, challenges, meetings with external bodies, problems and how they were over come.

Photographic display of various Wind generators examined.

A3 folder containing my spider diagrams (mind maps), Gantt chart showing my planning and organisation. Extract from contributions to the blog on Wind Turbines.

Display of the graphs and tabulated data indicating the relationship between the power output and identified design factors and environmental factors.

A4 folder containing evidence of the relevant factual data collated during the research phase or access to my e-portfolio.

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

Need to complete research before visits.
Need to make sure that visits can take place – do I have alternative companies.

Contingencies

<p>Any anticipated problems?</p> <p>Web conferencing not available for overseas energy company. Builder unwilling to be engaged in this project. Visit to a wind farm to see wind generators in action not possible.</p>	<p>My plans for overcoming the anticipated problems</p> <p>E-mail – communication with the overseas energy company. Locate a different company Carry out virtual research into wind generators.</p>
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Method for recording own skills development and future areas for improvement

I intend to use the progress log for keeping an on-going and regular record of activities completed, skills used and how my skills are developing as the project progresses.

Assessor comments

During our discussion, you clearly outlined a reasonable strategy to achieve the project objectives. Evidence of planning was shown through mind maps, Gantt charts and a list of visits that would need to be arranged to provide information for the project. The evidence you brought to the meeting and the discussion it generated showed that you had identified a good range of relevant research methods. You have thought about how you may present the project to your audience on completion of the project; you have also recognised that this element of the plan may alter in light of your findings. We discussed wider audience eg building company planning department and agreed this would be useful.

You have shown that you have identified a wide variety of areas/people to see. You gave clear justification for their selection in terms of the type of information that you would like to get from them to meet the project objectives.

You will review the number of contact visits that you undertake.

Plan approved	YES	Further work required	NO
Candidate signature	Date		
Assessor signature	Date		

Science: Interdisciplinary Project

Progress log

Candidate name	Adam Miller								
SCN									
Centre name									
Teacher/lecturer name	Mr Smith								
Project title	How can wind power contribute to power supply at local level?								
<p><i>Use this form to record progress with your project. Keeping an ongoing record will help prepare you for progress meetings with your teacher/lecturer, your presentation and final evaluation. Things you might want to record are:</i></p> <ul style="list-style-type: none"> • <i>what you have done (eg from one week to the next)?</i> • <i>what skills have you used and how you feel they have developed?</i> • <i>if you are working in a group, what discussions you have had?</i> • <i>any changes that you have (or will need) to make to your plans and reasons why</i> • <i>what resources you have found/hope to find?</i> • <i>any problems you are encountering and how you are resolving them</i> • <i>what you are going to do next?</i> 									
Date	<i>(This is an example of a page from Adam's log)</i>								
	Comments								
8/6	Enjoyed presentation skills seminar and have got more idea about what a presentation could involve.								
15/6	Meetings re planning skills was great and I feel that I can apply this in my other subjects as well.								
22/6	<p>The talk on time management was confusing as I am not familiar with the software, I will now need to download the software and get familiar with it.</p> <p>Meeting with tutor set me up for the summer so I can start to think about what I want to do in my project, will jot ideas down over the holiday.</p>								

24/6	Spent time chatting with friends and did some trawling over the Internet to see if information was actually available. Created first mind map. Arranged to meet my tutor for 15 mins to give myself some re-assurance that I had the right idea.
27/6	Met up with friends and discussed ideas, created a firmer mind map starting to think I really want to examine wind generators in depth. Met with tutor for 20 mins. Arranged to attend conference on wind energy that happened to be going on at the local Conference Centre, they agreed to not charge me for my attendance. Collected some business cards.

Science: Interdisciplinary Project

Record of Interim Review to be completed by candidate and assessor

Candidate name	Adam Miller								
SCN									
Centre name									
Assessor name	Mr Smith								
Project title	How can wind power contribute to power supply at local level?								
<p>Describe what you have done so far and how it meets your plan (changes, successes, difficulties encountered, how you resolved issues, targets met)</p> <p>Completed proposal and plan. Now in process of implementing the plan (my log supports this).</p> <p>Researching:</p> <ul style="list-style-type: none"> • design factors affecting power output • environmental factors affecting power output • factors affecting generator and transmission efficiency • other design constraints. <p>Enjoyed visit to the university – this was an eye opener to me. May have to go back.</p> <p>The conference was very busy; some of the areas covered had no direct link to my area of study but gave me background knowledge.</p> <p>Internet searches have been mixed – a lot of hits but trawling though the information has been hard – started printing a lot of hard copies but this was expensive. Moved to using e-portfolio to try and help sort this problem.</p> <p>Technical knowledge is starting to come together – Struggled to find information on how the design factors I have identified link quantitatively to power output from a wind generator. To overcome this problem, made contact again with the engineering department of the university – still waiting for results.</p> <p>Nervous about visiting the 'experts' in the companies.</p> <p>I still feel self evaluation is an area of weakness for me and may need some guidance in this area. My main concern is how to evaluate myself without being too negative or positive.</p>									

What skills have you used and how far have they developed?

Learning to talk to people formally to obtain information and increase my communication skills.

My IT skills have improved.

My planning skills have developed and I have met my milestones.

My independent learning has certainly taken off – I have been left to get on with it and have still made contact with Mr Smith when required.

Next steps

- Making sure visits are possible.
- Making the visits.
- Document findings.
- Need support from Mr Smith on confidence that I am progressing in the correct way.
- Develop presentation.

Assessor comments

An excellent response to feedback from initial meetings meaning that challenges with organising your research skills have been overcome.

E-portfolio requires to be better organised before the presentation.

You are developing a good understanding of the technical aspects of the project and are using correct technical vocabulary in discussions – now ready to make visits.

You have clear ideas as to where you are going next so following your plan well. I agree with your own assessment that you have been successful because you have kept on task and have redirected your research effectively when you have had problems.

Candidate comments

Candidate signature	Date	
Assessor signature	Date	

Science: Interdisciplinary Project

Evaluation of project

Candidate name	Adam Miller								
SCN									
Centre name									
Assessor name	Mr Smith								
Project title	How can wind power contribute to power supply at local level?								
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.									
<p>In terms of finding information out about wind generators, I have been able to establish the relationship between rotor blade diameter, blade profile and blade angle to the wind direction and power output. I have also established the effect that increasing blade diameter has on the overall cost of a wind generator with a particular link between rotor diameter and the cost of the tower that is needed to support it.</p> <p>My project presentation also outlined the economic benefits, or otherwise, of using different sizes of generator to supply a local housing development. I have also gained knowledge of planning legislation as it applies to wind generators and have a much clearer impression of environmentalists' attitudes to the technology. This in large part meets the objectives identified at the beginning of the project.</p> <p>After several attempts I understood the organisation of e-portfolios. Selecting information that was relevant was hard due to depth of technical knowledge, relevant knowledge and time constraints. Log really helped me remember what I was doing, may have been better using an on-line calendar. I managed to keep to my milestones.</p> <p>The whole project was a challenge; my previous learning had been far more directed – always given a task to complete and guidance on how to complete it. In the beginning I felt that I had been thrown in at the deep end, but my confidence quickly developed as I made decisions and lead the discussions with Mr Smith.</p> <p>I had to create and refine mind maps in order to define the aims of my project. Every time I hit a problem I had sufficient ability to think of alternative options allowing me to re-direct my research.</p>									

I learnt there is a lot more to presentations than producing slides for a power point. Talking clearly and engagingly, taking into consideration my target audience in terms of technical and non-technical vocabulary and taking questions from the audience are also important. I have also developed my ability to present information graphically and to present an argument effectively in a limited time. This was particularly challenging when faced with reps from industry in the audience and needed to be tactful in recommendations.

How effective were my communication methods?

The project has given me a picture of the link between renewable energies and the environments in which they can be used. The process I have gone through to analyse technical information where several competing factors influence the final outcome will be of benefit when studying engineering next year.

I feel that I now have a better ability to sift information critically, identifying unbiased, relevant and timely information. I also have improved my ability to hold discussions with a variety of different people with a range of perspectives and then to organise, analyse and summarise this information.

Speaking to the building company and council planning department certainly made me far more aware of the range of issues that can affect the design process as well as the purely technical aspects of a project.

I have improved my communication skills by putting forward a coherent argument in my presentation. The audience had the opportunity to see the complex documents that I had to read, understand and then edit and display in a clear concise format for others. I had to learn how to present myself in a variety of settings and had to learn how to use email appropriately in order to achieve results. I had to listen carefully to the builders, councillors and eco group that I interviewed. Recording these interviews definitely helped as some of the knowledge provided was very technical.

With my plan I would have liked to have used professional planning software. It would have been quicker to create and modify plans than the spreadsheet used.

If I was to start this project again I would plan to make initial contact with all the manufactures, builders and the council planners at an earlier stage probably straight after proposal approval from my tutor. I feel the initial contact to introduce myself would have allowed me to gain agreement in principle that people would help me after I had carried out some more research. This would have made me feel more secure in my project progress as I had key contacts. This would have given me more opportunity to re-direct my project if they had not been agreeable. I did this successfully with my last contact.

I would like to have gone back to the university to examine research that university students had already done into wind generators, but I did not know about this until I was near completion of my project, it may have been possible to meet them.

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

I feel that I could now consider the following:

- do people wish to live in areas where it is windy enough to generate the power to run your house?
- does the erection of wind generators affect the wind patterns in a neighbourhood adversely?
- is there an alternative renewable energy source to wind power for housing?

Candidate signature

Date

Assessor signature

Date

Science: Interdisciplinary Project

Self evaluation of generic and cognitive skills development

Candidate name	Adam Miller								
SCN									
Centre name									
Assessor name									
Project title	How can wind power contribute to power supply at local level?								

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
Application of subject knowledge and understanding	
<ul style="list-style-type: none"> • Candidates should think about practical uses for the science(s) they have learned. • 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). • Plan how they can use their knowledge of sciences effectively as part of a successful project. • Use their sciences to help them carry out various aspects of the project. 	<p><i>Note to assessors – candidates should link the bulleted points specifically to the project they have carried out.</i></p>

Research skills – plan, research, analyse and evaluate	
<p>Plan</p> <ul style="list-style-type: none"> • Define your research subject by identifying its scope and key concepts. • Define your research process by identifying tasks and creating a schedule. • Show initiative in choosing methods of research eg contacting companies, surveys, focus groups, experimentation. • Identify and use relevant tools, resources and contacts for your research process. 	<p>Firstly I produced a mind map which helped to focus my ideas. This helped me to produce a Gantt chart which directed me to achieve my goals. I prioritised my activities and kept reviewing during my research.</p> <p>I used my research to plan where I was going to visit and who I was going talk to. My planning was effective because the people I spoke to and the organisations I visited were appropriate as I gained the information that I needed.</p> <p>I divided my tasks by being generous with time allocation and built in time for review – which I did not need to do, therefore the project was well planned.</p>
<p>Research</p> <ul style="list-style-type: none"> • Carry out research from a variety of sources. • Keep records and notes on strategies, sources, tools and resources used. • Adopt a referencing methodology (where appropriate). 	<p>I had a lot to learn about keeping records and notes in the form of an e-portfolio. By the end of the project I have a well constructed e-portfolio from which I found easy access to information.</p> <p>This will be a useful skill for projects I do in the future so I will keep working on this area.</p>
<p>Analyse</p> <ul style="list-style-type: none"> • Analyse the usefulness and reliability of materials gathered and resources consulted • Return to research stage as necessary 	<p>Initially, I gathered a wide variety of information from lots of sources. I had to analyse each source as to its usefulness for my project. I learnt to compare the materials I collected against the criteria in the technical investigation that I listed in my Gantt chart and this helped me to select the information that was appropriate.</p> <p>As I progressed if I found out more information I went back to my evidence for that area to make sure I had concise findings.</p>

<p>Evaluate</p> <ul style="list-style-type: none"> Evaluate the research process. 	<p>Overall, the research process was well carried out because I gathered all the information I needed, analysed and evaluated it and was able to draw valid conclusions from it. In addition, I maintained accurate records of all of this information and was able to make easy reference to it throughout the project.</p>
Interpersonal skills – negotiate and collaborate	
<ul style="list-style-type: none"> Consider other peoples' views/feedback. Discuss issues of concern, seeking resolution where needed. Adjust your approach in response to a situation/ environment. Have positive self belief. Be confident enough to offer and ask for support. 	<p>I felt I improved in my ability to convey my information concisely in discussion with Mr Smith and developed my ability to communicate with people from 'outside' organisations which I did not have any prior experience of.</p> <p>I felt that I was able to think of alternatives when original ideas for sources of information did not yield results eg could not make contact with an overseas energy company. Used local energy company as my main source of information.</p> <p>I do not like approaching strangers for information but recognise I need to be able to this. I felt that I was actually able to get a lot of information out of people. My skills improved over the course of the interviews as can be heard from the audio files. From these interviews I was then able to understand what the companies were doing in wind generation research and implementation I could then refer back to my research.</p>
Planning – time, resource and information management	
<ul style="list-style-type: none"> Estimate time needed and set milestones (targets). Monitor/record progress using tools such as schedules, diaries, logs and calendars to help completion of activities. Consider any probable barriers to achievement and take steps to minimise them. 	<p>Used my Gantt chart which helped me throughout.</p> <p>I had a detailed log which assisted my memory in remembering what I had done and when.</p> <p>I found that my initial guesstimates of time needed for key stages of the project were actually pretty accurate; I did not have to adjust my milestones significantly.</p> <p>My contingency plans were in place and were effective.</p>

Independent learning – autonomy and challenge in own learning	
<ul style="list-style-type: none"> • Use my skills responsibly to make things happen. • Take initiative to establish links with other learning environments/opportunities. • Look for challenges and don't necessarily take the easy option. 	<p>It was rewarding to be able to follow a line of enquiry and be able to put together information from different sources and then make up my own mind on my findings representing different view points.</p> <p>I developed my knowledge of design factors of the wind generators and made use of the university library.</p> <p>I arranged my own access to resources at the university and all the interviews with professional bodies.</p>
Problem solving – critical thinking; creative and logical approaches	
<ul style="list-style-type: none"> • Generate and explore ideas to support my project. • Use creative approaches such as lateral thinking. • Use logical, step by step thinking approaches. • Consider how a situation may have arisen and possible contributory factors. • Think critically about possible actions/changes that would improve the situation. • Analyse points of view in source materials in order to support findings from my research eg flaws in the reasoning; relevance; reliability; supporting evidence; credibility of sources of evidence. 	<p>I used my mind map to generate ideas for developing my project.</p> <p>I am pleased I chose to use a gantt chart to plan my project as this helped me to approach it in a logical way and to keep on schedule.</p> <p>I confidently overcame the problem when I could not make contact with the overseas energy company, instead I used a local energy company. On reflection I realise that it may have been overly ambitious for me to have expected to visit the overseas energy company. It was also not necessary as I got the information that I needed from another source.</p> <p>As I worked through the project I realised that a leaflet outlining my findings would be a useful means of communication which people would find easy to access.</p>

Presentation skills	
<ul style="list-style-type: none"> • Choose appropriate formats and apply effectively eg written, oral, video, multimedia. • Consider my target audience, the layout, structure, degree of formality of my presentation. • Gather, select and include relevant information or ideas, emphasising the main points. • Present information/ideas/reflections with supporting detail in a logical order, reaching a reasoned conclusion. 	<p>I considered my target audience when choosing formats at the start in the plan, having done my research these did not change. I produced an information leaflet and distributed this to everyone that helped me with my project. I believe that this was one of the most effective ways of presenting my findings. This was backed up by using written, oral, presentation and electronic formats.</p> <p>I increased my IT Skills to enable me to do this.</p> <p>I became more confident in presenting information as I felt this was an area of weakness at the start of the project.</p>
Self evaluation – recognition of own skills development and future areas for development	
<ul style="list-style-type: none"> • Ask for feedback and deal positively with praise, setbacks and criticism. • Reflect on my experiences and feedback from others to assess the development of my knowledge, skills and understanding. • Learn from my experiences and use to inform future progress. 	<p>Meetings with tutor helped with feedback and I asked at each meeting how I was doing and what I could improve on and I acted on this feedback. At first I found this uncomfortable but appreciated that it was an important part of my development.</p> <p>I learnt a lot from my initial visits to companies and these experiences were then taken forward to following interviews. My confidence in speaking to people who are older than myself has developed.</p> <p>I received 'informal' feedback from S5 following my presentation. They said that I spoke too quickly at the start of the presentation but I got better as it progressed. They said that I answered their questions in a clear and understandable way. I was really pleased that they were all really interested in my project. I will take this feedback on board for any future presentation.</p>

This section is not mandatory. It has been included to allow the candidate the opportunity to undertake an overall reflection of their project.

Reflection on my experiences throughout this project (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).

I am proud that I completed this project in a challenging time scale and would like to see if anyone would take on my findings and have a wind generator.

Are there any skills that you have used in this project that you would like to develop further? (for example, using skills in even more challenging situations, more working on own, more team working).

I need to extend my knowledge of technical research journals.

More experience of presentations to an audience that is outwith my school environment.

I would like to consider extending this project to look at other power sources eg solar but I would like to learn about how to work in a group rather than on my own.

Science: Interdisciplinary Project

Assessment checklist

Candidate name Adam Miller

Candidate number _____

Centre _____

Project proposal	Tick as appropriate
Grade C criteria	
Clear aims and reasoned arguments to support the relevance and practicability of the project.	✓
Identification of opportunities for:	✓
• own skills development	✓
• collaborative working	✓
• accessing less familiar learning environments	✓
• application of science subject knowledge in a broad context	✓
• use of knowledge and skills across different disciplines	✓
• making connections between subject knowledge and the wider world.	✓
Grade A criteria, includes all of above plus	
Well conceived proposal which sets creative and challenging goals which are at the same time realistic, achievable and practicable.	✓
Robust and carefully argued justification of the proposal.	✓
Substantial links and understanding of possible connections across disciplines contributing to the project.	✓

Project plan	Tick as appropriate
Grade C criteria	
Development of clear project objectives in line with the project proposal.	✓
Relevant and detailed planning strands to enable the project to be implemented, monitored, presented and evaluated.	✓
Realistic timescales and achievable milestones for each stage of the project.	✓
Clear identification of resources needed, research methodologies to be used, opportunities for support and feedback.	✓
Grade A criteria, includes all of above plus	
Careful selection and effective use of research/investigation techniques.	✓
Anticipation of probable and possible factors which may impact on the project.	✓
Clear identification of dependencies or reliance on the success of other strands of work and of necessary adjustments to the plan.	✓
Outline the process for achieving own identified development needs.	✓

Presentation of project findings/product	Tick as appropriate
Grade C criteria	
Evidence of effective and critical use of: resources, research methodologies, information and time management, prioritisation, problem solving approach to reach objectives, feedback, collaborative approaches, self monitoring.	✓
Application of specialist and interdisciplinary subject knowledge to establish meaningful connections within the broad theme.	✓
Clear presentation of main findings/product.	✓
Grade A criteria, includes all of above plus	
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.	✓
Skilful and creative use of resources, including people, information and learning contexts to progress the project.	✓
Accurate and deepening of understanding through application of subject knowledge in the chosen context, with meaningful connections well established.	✓

Evaluation of project	Tick as appropriate
Grade C criteria	
A critical and justified evaluation of all stages of the project process: planning, implementation and findings/product in terms of strengths, weaknesses and learning points.	✓
Effective use of chosen communication method(s).	✓
Grade A criteria, includes all of above plus	
Incisive, well balanced evaluation of the project outcome against project aims, supported convincingly by well selected evidence.	✓
Careful choice and skilful use of communication and presentation methods(s).	✓

Self evaluation of generic/cognitive skills development	Tick as appropriate
Grade C criteria	
A critical evaluation of own skills development against the list of specified generic/cognitive skills.	✓
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.	✓
Grade A criteria, includes all of above plus	
Insightful, balanced and well structured self evaluation of own development.	✓
Assertive and justified use of feedback from others in evaluation and identification of development areas.	✓

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.

Overall grade awarded	A B C Unsuccessful
Assessor comments An independent worker who drove the project from the outset. Slightly hesitant with initial work on project proposal and planning, but the plan that was produced worked very well and milestones were met consistently. Monitoring of progress and creative/critical thinking as the project evolved were excellent. The information gathered through meetings with a range of experts, interested parties and from electronic sources was analysed and managed very effectively and was used concisely and relevantly to argue the main thesis put forward in the project. You had the confidence to make your own contacts and clearly prepared well prior to meetings; feedback from your contacts was positive. The presentation was confident, engaging and well-suited to the audience. You took a reflective approach to the project work throughout and made relatively mature use of the broad range of cognitive and generic skills necessary for the successful completion of the project.	

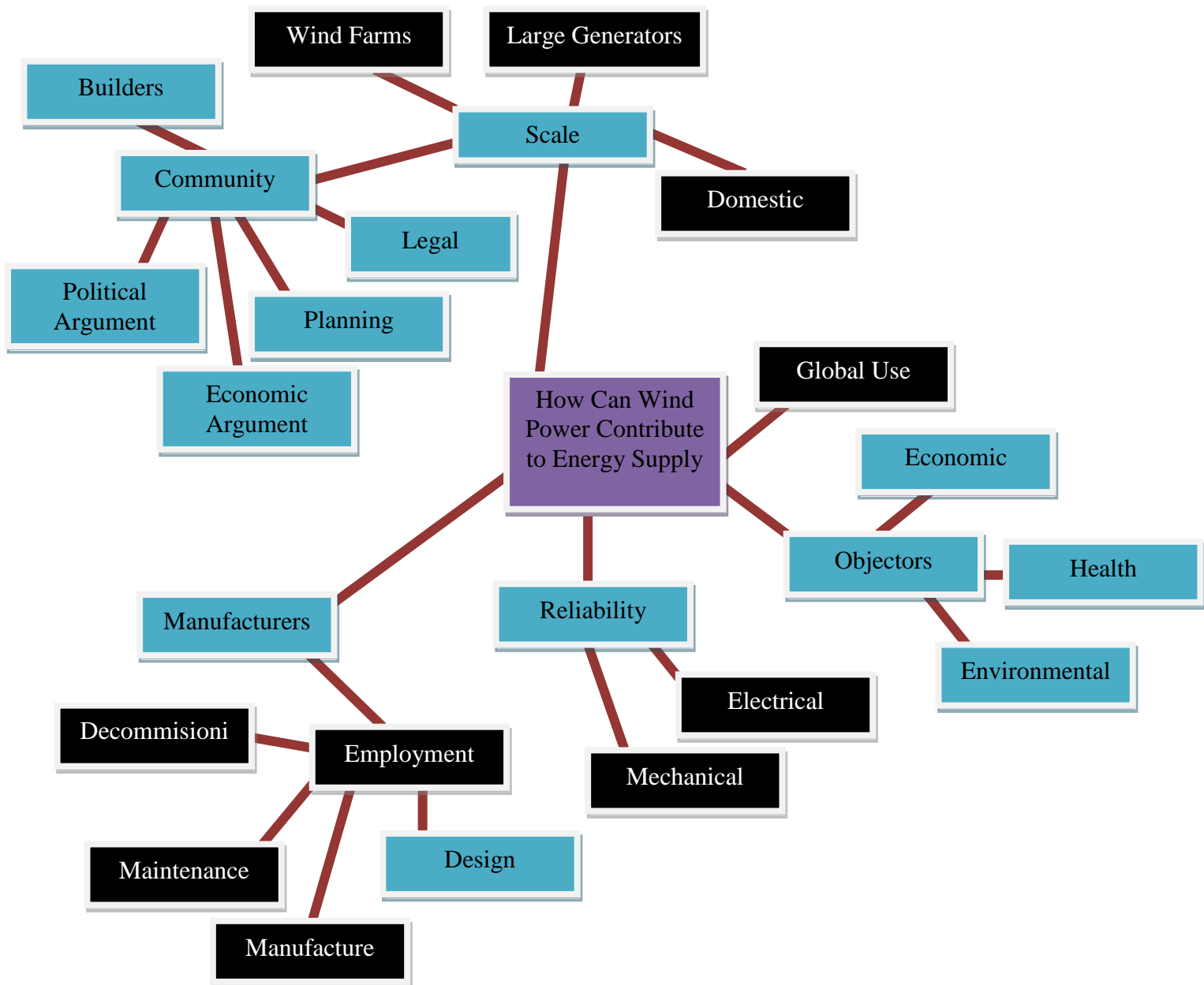
Assessor signature _____ **Date** _____

Internal verifier signature _____ **Date** _____

Supporting evidence for candidate A

Candidate A produced the following documentation to assist with the planning of the project. None of the documentation is formally assessed but they are useful tools for planning.

Mind map



Project 2 – Example of Grade C

Science: Interdisciplinary Project

Proposal

Candidate name	Paula Campbell								
SCN									
Centre name									
Assessor name	Mrs Jones								
Project title	How can wind power contribute to power supply at local level?								
Project outline (what it is I want to do and how will I go about it)									
<p>This project will investigate the use of wind generators to generate electricity for homes locally.</p> <p>I would like to look at a range of wind generator sizes to find out whether one size is best suited to generate electricity for a housing estate. The following groups will be consulted: wind generator manufacturers, community groups, environmentalists, local builders and the local planning department.</p>									
Reasons for choosing this project (eg personal interest, future plans, links to other subjects I am studying/ have studied)									
<p>I have chosen this project because I am studying Advanced Higher Technological Studies, Maths and Physics. I am interested in the environment and renewable energies and hope to study Engineering at University next year. I want to improve my communication skills so that I can communicate more confidently.</p> <p>I also need to develop my research skills because my previous courses did not involve much research or discussion with subject specialists other than my teachers.</p>									
The broad contexts this project will cover are:									
<input type="checkbox"/> Citizenship <input type="checkbox"/> Enterprise <input type="checkbox"/> Employability <input checked="" type="checkbox"/> Economic development <input checked="" type="checkbox"/> Sustainable development									

Learning environments I will access are

University library
Wind turbine company
On-Line tutorials
Internet.

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 Maths, Physics and Technological Studies to this project.

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 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 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 my plans have to be changed.

Presentation skills – I will need good presentation skills when I discuss/negotiate with my teacher and those people I have to speak to outwith 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

Positive start – chose your topic to match own interest although had very wide scope. We had to narrow this down.

You brought some notes to the proposal meeting but these were not particularly well organised and you required some prompting in order to convey the full outline of your proposal.

- You demonstrated a clear understanding of most of the project information provided during induction.
- You showed that you have considered the cognitive and generic skills essential to this Unit.
- You have demonstrated that there is scope in this topic to explore engineering principles at a depth comparable to AH level of study in Tech Studies, and Higher Mathematics.
- The goals presented are realistic and will provide challenge for you if you think creatively.

This project proposal is realistic and achievable, if you action comments made during this meeting.

Proposal approved	YES	Further work required	NO
Candidate signature			Date
Assessor signature			Date

Science: Interdisciplinary Project

Plan

Candidate name	Paula Campbell								
SCN									
Centre name									
Assessor name	Mrs Jones								
Project title	How can wind power contribute to power supply at local level?								
<p>Is this a group project? yes <input type="checkbox"/> no <input checked="" type="checkbox"/></p> <p>If a group project, what will your role or responsibilities be?</p>									
<p>Timescales (start, finish and milestones)</p> <p>My project should be ready for Implementation by October. I should be able to discuss at a technical level how wind generators should function to meet my project requirements by Christmas. I plan to do my presentation in March.</p>									
<p>Planning – state how you are going to meet the agreed objectives of your project</p> <p>Contact and arrange meetings with the following:</p> <ul style="list-style-type: none"> • Building company to arrange a visit to find out if a building company can apply for any grants if they include green energy in planning submissions for new housing. • Energy company to arrange a visit – to see what generators looks like! • Primary school with wind generator – why did they do this, does it work? • Wind farm – to see if I can find out how the energy generation profile varies and how noisy they are. • Environmental group interested in alternative energies. • Planning Offices – to find out if there are any planning restrictions on building generators near housing. 									

Resources (people, materials, places)

Sign up for access to the local university library.

Find out what paperwork needs to be completed before visits to companies.
Find out if the school has any rules/procedures for contacting external agencies – letter head, email from school office or can I use my personal email account.
Website access.

Arrange meetings with:

- my tutor to discuss progress
- external agencies listed above.

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

Ask questions of experts to understand the technological aspect of the project.
Web searches relating to the technical detail of wind generators.
Visit the university library for reports on wind generators.
Plan visits to companies and organisations identified above.

Presentation

- **Who do I think will benefit from listening/reading/looking at my presentation of my project findings/product?**

My audience will be the Higher Technological Studies class, the head teacher and depute in charge of curriculum along with my tutor. I have been given 30 minutes to present my project including questions.

- **What methods are appropriate to the audience (for example demonstration, presentation software, websites, oral, report, piece of theatre, dvd, wiki/blog or any combination)**

Power Point presentation:

This will discuss my objectives, the findings, the planning, learning points, challenges, meetings with external agencies, problems and how they were over come.

I will also have photos of various wind generators researched.

Folio of evidence of the relevant factual data collated during the research phase or access to my e-portfolio.

A summary of the evidence gathered during my research – handout.

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

Need to complete my research before going on visits.
I also need to make sure visits can take place and think about alternatives.

Contingencies

Any anticipated problems?

Building company doesn't want to be involved.
Visit to a wind farm not possible.

My plans for overcoming the anticipated problems.

Find a different company.
Research wind farms online.

Method for recording own skills development and future areas for improvement

I intend to keep a list of meetings on the electronic log sheet provided by my teacher from the SQA.

Assessor comments

Through discussion, you identified a number of the project objectives that linked your proposal. The evidence you brought to the meeting and the discussion it prompted showed that there is scope for a broader range of relevant research methods than you had considered. You had thought about how you may present your findings to the audience on completion of the project, assuming that the project runs to plan with no need for modification.

Although we have discussed your milestones and they seem realistic, I would recommend that you make a record of these for future reference.

There is definitely scope for you to develop the generic and cognitive skills required, but may work further to identify exactly how they will be developed through your project work, although you have knowledge of what each might entail.

You have shown that you have identified areas/people to see.

At this stage, you have not identified any source of expertise that is likely to be able to support you in developing your understanding of technical issues much beyond curricular level, but recognise that you must do so.

Plan approved	YES	Further work required	NO
Candidate signature	Date		
Assessor signature	Date		

Science: Interdisciplinary Project

Progress log

Candidate name	Paula Campbell								
SCN									
Centre name									
Assessor name	Mrs Jones								
Project title	How can wind power contribute to power supply at local level?								
<p><i>Use this form to record progress with your project. Keeping an ongoing record will help prepare you for progress meetings with your teacher/lecturer, your presentation and final evaluation. Things you might want to record are:</i></p> <ul style="list-style-type: none"> • <i>what you have done (eg from one week to the next)?</i> • <i>what skills have you used and how you feel they have developed?</i> • <i>if you are working in a group, what discussions you have had?</i> • <i>any changes that you have (or will need) to make to your plans and reasons why</i> • <i>what resources you have found/hope to find?</i> • <i>any problems you are encountering and how you are resolving them</i> • <i>what you are going to do next?</i> 									
Date	<i>(This is an example from Paula's log)</i>								
	Comments								
31/8	<p>Presented my proposal to my teacher, I felt it did not go too well because I was not properly prepared for this meeting. I have now to think about how I am going to plan my project before the next meetings. I am going to make sure I have several meetings with Mrs Jones to try and get myself organised.</p> <p>Spoke to Mrs Jones re my visits that I wanted to do.</p> <p>Did some Internet searches on generator companies in Scotland.</p>								
5/10	<p>Presented my plan to Mrs Jones, we had a long discussion and she said I could go ahead.</p> <p>Still struggling to remember to fill in this log, but feel I am working well.</p> <p>I am enjoying this project, I like being independent.</p>								

	<p>Getting prepared for my next meeting with Mrs Jones. She is supporting me a lot in getting areas narrowed down.</p> <p>Meeting Mrs Jones, we discussed my visits and my paper mountain of printouts from the Internet.</p> <p>I have not had a reply to the letters I sent a week ago to arrange my visits.</p> <p>I am going to email external agencies instead and try and make contact that way.</p>
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Science: Interdisciplinary Project

Record of Interim Review to be completed by candidate and assessor

Candidate name	Paula Campbell								
SCN									
Centre name									
Assessor name	Mrs Jones								
Project title	How can wind power contribute to power supply at local level?								
<p>Describe what you have done so far and how it meets your plan (changes, successes, difficulties encountered, how you resolved issues, targets met) Completed proposal and plan. I am now part way through the of implementation of the plan.</p> <p>Researching:</p> <ul style="list-style-type: none"> • design factors affecting generators • environmental factors affecting generators • factors affecting generator • other design constraints. <p>Mixed results from internet searches – a lot of hits but sifting though the information has been difficult – have made lots of print outs.</p> <p>Technical knowledge – am I asking the correct questions?</p> <p>Looking forward to my visits as they should help to answer some of my questions.</p> <p>Arranged access to university library – how will that information fit with web results?</p>									
<p>What skills have you used and how far have they developed? I have been talking to a variety of different people and my communication skills have improved. My planning skills are developing but need to fill in log more regularly. My independent learning has still a way to go as I still need a fair amount of support.</p>									

Next steps

- Making the visits.
- Document findings.
- Start to develop presentation.

Assessor comments

Your research skills could still be improved – perhaps you would prefer to use an e-portfolio.

More research is required on the technical issues from wind generators.

You have requested more regular meetings so that I can give you support if you need it.

Candidate comments**Candidate signature****Date****Assessor signature****Date**

Science: Interdisciplinary Project

Evaluation of project

Candidate name	Paula Campbell									
SCN										
Centre name										
Assessor name	Mrs Jones									
Project title	How can wind power contribute to power supply at local level?									
<p>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.</p> <p>In terms of finding information out about wind generators, I have been able to establish the relationship between rotor blade diameter, blade profile and blade angle to the wind direction and power output. I would have liked to have gone into more technical depth (as I had originally planned), however I spent too long considering the aesthetic aspects of a generator.</p> <p>My project presentation also outlined the different sizes of generator needed to supply a local housing development. I also presented information about environmentalist's objections to this type of energy. This in large part meets the objectives identified at the beginning of the project.</p> <p>I found planning the project quite difficult but did manage to identify milestones which I managed to meet successfully. Looking back, it would have been better to have a more detailed proposal from which to plan the work of the project.</p> <p>At the start I did not find this type of study easy and got better at finding things out for myself as the project developed. Mrs Jones made a lot of suggestions. I would feel more confident about the steps to take if working on a project like this again.</p> <p>Accessing university information was helpful. There is a very different feeling there – you are expected to know what you are looking for.</p> <p>Got 'stuck' once or twice when implementing my project and not being able to find a source for the information that I was looking for. Mrs Jones gave some helpful prompts towards sources.</p>										

How effective were my communication methods?

In hindsight I recognise that, at the planning stage, I should have thought about contingency planning because the council planning department did not have time to speak to me at any length. Therefore, I was unable to establish whether they had any policy regarding wind generation for housing estates.

I did not investigate sources that I might have used as alternatives for the three people that I contacted for information.

I think that I will need to prepare more effectively before attending meetings in order to get what I want and need from them.

On the plus side, my strategy for accessing different technical and ecological papers was very successful.

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

I would like to take this further by examining whether small-scale vertical axis wind-generators act with greater success than horizontal axis generators to produce household electricity.

Candidate signature

Date

Assessor signature

Date

Science: Interdisciplinary Project

Self evaluation of generic and cognitive skills development

Candidate name	Paula Campbell									
SCN										
Centre name										
Assessor name	Mrs Jones									
Project title	How can wind power contribute to power supply at local level?									

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
Application of subject knowledge and understanding	
<ul style="list-style-type: none"> • Candidates should think about practical uses for the science(s) they have learned. • 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). • Plan how they can use their knowledge of sciences effectively as part of a successful project. • Use their sciences to help them carry out various aspects of the project. 	<p><i>Note to assessors – candidates should link the bulleted points specifically to the project they have carried out.</i></p>

Research skills – plan, research, analyse and evaluate	
<p>Plan</p> <ul style="list-style-type: none"> • Define your research subject by identifying its scope and key concepts. • Define your research process by identifying tasks and creating a schedule. • Show initiative in choosing methods of research eg contacting companies, surveys, focus groups, experimentation. • Identify and use relevant tools, resources and contacts for your research process. 	<p>I could have had a clearer and more detailed plan. As a result of this I needed support from Mrs Jones in identifying tasks and milestones.</p> <p>I felt I was good at selecting the companies I wanted to visit.</p> <p>I planned to get information from the University library and this proved to be a good source.</p>
<p>Research</p> <ul style="list-style-type: none"> • Carry out research from a variety of sources. • Keep records and notes on strategies, sources, tools and resources used. • Adopt a referencing methodology (where appropriate). 	<p>I tried to keep records but should have used the log sheet more rather than just at the milestone times.</p> <p>I researched using visits and the Internet and emailed a few people. University was excellent source – very complex papers to interpret and sort out.</p>
<p>Analyse</p> <ul style="list-style-type: none"> • Analyse the usefulness and reliability of materials gathered and resources consulted. • Return to research stage as necessary 	<p>I found this area hard – what do I need and what do I not. Mrs Jones helped me with this at the start.</p> <p>I enjoyed reading about technical areas and considering how people might like to live with generators – working out which were most convincing arguments was interesting and worthwhile.</p> <p>Did not like to contact the companies again with my questions – I should have done as this would have enhanced my project.</p>

<p>Evaluate</p> <ul style="list-style-type: none"> Evaluate the research process. 	<p>Overall, I gathered all the information I needed, analysed and evaluated it and was able to draw valid conclusions from it. In addition, I maintained accurate records of all of this information and was able to make easy reference to it throughout the project. I managed to do all of this but needed some help from Mrs Jones at the start of the project.</p>
<p>Interpersonal skills – negotiate and collaborate</p>	
<ul style="list-style-type: none"> Consider other peoples' views/feedback. Discuss issues of concern, seeking resolution where needed. Adjust your approach in response to a situation/ environment. Have positive self belief. Be confident enough to offer and ask for support. 	<p>I felt I improved in my ability to discuss information with Mrs Jones and took on board her advice and feedback. I developed my ability to communicate with people from external agencies which I did not have any prior experience of.</p> <p>I felt that I was able to think of alternatives when original ideas for sources of information did not yield results eg when I didn't get a written reply from the energy company I resorted to using e-mail. This worked to my advantage and I would use this method of communication in the future.</p> <p>I do not like approaching strangers for information but recognise I need to be able to do this. I felt that I was actually able to get a lot of information out of people. My skills improved over the course of the interviews as can be heard from the audio files. From these interviews I was then able to understand what the companies were doing in wind generation research and implementation I could then refer back to my research.</p>
<p>Planning – time, resource and information management</p>	
<ul style="list-style-type: none"> Estimate time needed and set milestones (targets). Monitor/record progress using tools such as schedules, diaries, logs and calendars to help completion of activities. Consider any probable barriers to achievement and take steps to minimise them. 	<p>Need to get myself better organised. Was bad at filling in my log. I was always in a rush to meet my targets – everything being done at the last minute. Prefer doing things to planning them but realise they go together.</p>

Independent learning – autonomy and challenge in own learning	
<ul style="list-style-type: none"> • Use my skills responsibly to make things happen. • Take initiative to establish links with other learning environments/opportunities. • Look for challenges and don't necessarily take the easy option. 	<p>As I carried out this project I become much more of an independent learner, this will help me when I go to University.</p> <p>I took the 'easy' option sometimes as my planning was not as effective as it could have been and therefore I did not have as much time as I had anticipated.</p> <p>I needed to ask for support from Mrs Jones, although by the end of the project I was working on my own.</p>
Problem solving – critical thinking; creative and logical approaches	
<ul style="list-style-type: none"> • Generate and explore ideas to support my project. • Use creative approaches such as lateral thinking. • Use logical, step by step thinking approaches. • Consider how a situation may have arisen and possible contributory factors. • Think critically about possible actions/changes that would improve the situation. • Analyse points of view in source materials in order to support findings from my research eg flaws in the reasoning; relevance; reliability; supporting evidence; credibility of sources of evidence. 	<p>I think that my problem solving skills are better now than they were when I started this project. There were times when I had to solve a problem (mainly because I hadn't planned properly) – so I have developed troubleshooting skills.</p> <p>I found out that I was good at finding out information from a variety of sources (internet and library). I used information from technical and ecological journals as these are more credible sources than some of the articles I found on the internet.</p>

Presentation skills	
<ul style="list-style-type: none"> • Choose appropriate formats and apply effectively eg written, oral, video, multimedia. • Consider my target audience, the layout, structure, degree of formality of my presentation. • Gather, select and include relevant information or ideas, emphasising the main points. • Present information/ideas/reflections with supporting detail in a logical order, reaching a reasoned conclusion. 	<p>I decided to use a power point presentation because I am good at them and have my PCPassport certificate. My audience was the Higher class and several teachers.</p> <p>I made several slides and gave everyone a handout which I thought was very clear.</p> <p>I laid my slides out well and took questions from my audience.</p>
Self evaluation – recognition of own skills development and future areas for development	
<ul style="list-style-type: none"> • Ask for feedback and deal positively with praise, setbacks and criticism. • Reflect on my experiences and feedback from others to assess the development of my knowledge, skills and understanding. • Learn from my experiences and use to inform future progress. 	<p>Feedback from the presentation was good.</p> <p>I have listened to the comments from the audience. I handed out evaluation sheets and will hand them in to Mrs Jones when I have my final meeting.</p> <p>I was really pleased to have very positive feedback from the person I spoke to at the energy company. I was more prepared for this meeting as I had learned from my earlier experiences that preparation is important.</p>

This section is not mandatory. It has been included to allow the candidate the opportunity to undertake an overall reflection of their project.

Reflection on my experiences throughout this project (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).

I have loved doing this project and I hope to take the information I have gained when I go to study engineering.

Are there any skills that you have used in this project that you would like to develop further? (for example, using skills in even more challenging situations, more working on own, more team working).

I have learnt that I need to get a lot more organised and be a lot more self motivated to carry out my project and not rely on the teacher as much.

Science: Interdisciplinary Project

Assessment checklist

Candidate name Paula Campbell

Candidate number _____

Centre _____

Project proposal	Tick as appropriate
Grade C criteria	
Clear aims and reasoned arguments to support the relevance and practicability of the project.	✓
Identification of opportunities for:	✓
• own skills development	✓
• collaborative working	✓
• accessing less familiar learning environments	✓
• application of science subject knowledge in a broad context	✓
• use of knowledge and skills across different disciplines	✓
• making connections between subject knowledge and the wider world.	✓
Grade A criteria, includes all of above plus	
Well conceived proposal which sets creative and challenging goals which are at the same time realistic, achievable and practicable.	
Robust and carefully argued justification of the proposal.	
Substantial links and understanding of possible connections across disciplines contributing to the project.	

Project plan	Tick as appropriate
Grade C criteria	
Development of clear project objectives in line with the project proposal.	✓
Relevant and detailed planning strands to enable the project to be implemented, monitored, presented and evaluated.	✓
Realistic timescales and achievable milestones for each stage of the project.	✓
Clear identification of resources needed, research methodologies to be used, opportunities for support and feedback.	✓
Grade A criteria, includes all of above plus	
Careful selection and effective use of research/investigation techniques.	
Anticipation of probable and possible factors which may impact on the project.	
Clear identification of dependencies or reliance on the success of other strands of work and of necessary adjustments to the plan.	
Outline the process for achieving own identified development needs.	

Presentation of project findings/product	Tick as appropriate
Grade C criteria	
Evidence of effective and critical use of: resources, research methodologies, information and time management, prioritisation, problem solving approach to reach objectives, feedback, collaborative approaches, self monitoring.	✓
Application of specialist and interdisciplinary subject knowledge to establish meaningful connections within the broad theme.	✓
Clear presentation of main findings/product.	✓
Grade A criteria, includes all of above plus	
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.	
Skilful and creative use of resources, including people, information and learning contexts to progress the project.	
Accurate and deepening of understanding through application of subject knowledge in the chosen context, with meaningful connections well established.	

Evaluation of project	Tick as appropriate
Grade C criteria	
A critical and justified evaluation of all stages of the project process: planning, implementation and findings/product in terms of strengths, weaknesses and learning points.	✓
Effective use of chosen communication method(s).	✓
Grade A criteria, includes all of above plus	
Incisive, well balanced evaluation of the project outcome against project aims, supported convincingly by well selected evidence.	
Careful choice and skilful use of communication and presentation methods(s).	

Self evaluation of generic/cognitive skills development	Tick as appropriate
Grade C criteria	
A critical evaluation of own skills development against the list of specified generic/cognitive skills.	✓
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.	✓
Grade A criteria, includes all of above plus	
Insightful, balanced and well structured self evaluation of own development.	
Assertive and justified use of feedback from others in evaluation and identification of development areas.	

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.

Overall grade awarded	A B C Unsuccessful
Assessor comments <p>Your independence developed steadily, but you needed fairly regular reassurance that your strategy and progress were satisfactory throughout the duration of the project. Hesitant with initial work on the project proposal; probably a pity that you chose not to revisit the proposal as suggested again at the end of the first formal meeting. Planning, whilst sufficient to satisfy the unit requirements, lacked sufficient detail and consideration of contingencies to be likely to stand unaltered through the course of the project. Key milestones were identified after some prompting and these did work well to progress the project. Monitoring of progress and creative/critical thinking were occasionally evident, but did not generate much work that was out of the ordinary. Information was gathered through meetings with two experts, and an environmental group. The information furnished was all recorded, but not filtered effectively. Information was used fairly relevantly to argue the main thesis put forward in the project. You initially lacked the confidence to make your own contacts; this improved as you gained confidence in your own understanding of the subject of the project. The presentation went well. You were engaging, but the talk could have gone into a little more technical detail at a couple of key points. You took an increasingly reflective approach to the project work as it progressed and made reasonable use of the broad range of cognitive and generic skills necessary for the successful completion of the project.</p>	

Assessor signature _____

Date _____

Internal verifier signature _____

Date _____

Section 10

Templates for candidates and assessors

Templates for candidates and assessors

This section provides examples of templates that could be used by candidates to assist them with the planning of, and reflection on their Interdisciplinary Project.

The format of the templates is by no means mandatory (with the exception of the grade criteria in the Assessor Report). Candidates should be encouraged to adapt them in a way that suits their preferred style and approach. However, if templates are adapted it is important that they retain all the necessary candidate evidence to meet the Unit requirements.

- Project requirements.
 - Project proposal.
 - Project plan.
 - Progress log.
 - Interim review.
 - Evaluation of the project.
 - Self evaluation of generic and cognitive skills development.
-
- Assessor Report – Assessors should complete an Assessor Report for each candidate by ticking the boxes for the criteria which have been met and by completing the Comments boxes. It will be useful for candidates to see the criteria for each piece of evidence and they may be given a blank copy of the report for reference before they complete templates, to ensure that all requirements for the unit are being addressed. The Assessor Report is a mandatory piece of evidence which should accompany the completed Candidate Templates.

Project requirements – Information for candidates and assessors

The project you choose must be an investigation or a practical assignment. It should be of personal/career interest to you and it will provide you with opportunities to do the following.

- Link with and work within different and less familiar learning environments to support the project.
- Use your knowledge and understanding of sciences and other areas of learning across the curriculum in one or more of the following broad contexts:
 - employability
 - enterprise
 - citizenship
 - sustainable development
 - economic development.
- Make connections between subject knowledge and the wider world.
- Develop the following cognitive and generic skills:
 - **application** – of subject knowledge and understanding
 - **research skills** – analysis and evaluation
 - **interpersonal skills** – negotiation and collaboration
 - **planning** – time, resource and information management
 - **independent learning** – autonomy and challenge in own learning
 - **problem solving** – critical thinking; logical and creative approaches
 - **presentation skills**
 - **self evaluation** – recognition of own skills development and future areas for development.

Evidence of achievement should be organised in a folio or e-portfolio which contains five mandatory pieces of evidence. These are:

- project proposal
- project plan
- presentation of project findings/product
- evaluation of project
- self evaluation of generic/cognitive skills development.

Assessors should ensure that they fully complete the Assessor Report along with the final grade and include this with the candidate evidence.

Evidence in the folio may be presented in any suitable recorded format including e-evidence.

Group projects

You may wish to undertake the Interdisciplinary Project as part of a group. **Each** member of your group must clearly define his/her role and responsibilities and must demonstrate an appropriate level of participation in all five stages of the project.

You must complete all five pieces of mandatory evidence **individually**, with reference to your **own** work on the project and **your** individual skills development. However, when working as part of a group it is expected that you would make reference to collaborative work you have undertaken, emphasising your role in the project.

Science: Interdisciplinary Project

Proposal

Candidate name									
SCN									
Centre name									
Assessor name									
Project title									
Project outline (<i>what it is you want to do and how will you go about it</i>)									
Reasons for choosing this project (<i>eg personal interest, future plans, links to other subjects you are studying/ have studied</i>)									
The broad contexts this project will cover are									
<input type="checkbox"/> Citizenship <input type="checkbox"/> Enterprise <input type="checkbox"/> Employability <input type="checkbox"/> Economic development <input type="checkbox"/> Sustainable development									
Learning environments I will access are									
How I will use my knowledge of science/technology									
The skills I will develop and/or improve in the course of this project are: <i>(carry out a short analysis of your current strengths and weaknesses in the skills areas below and how you think your project will allow you to develop and/or improve these skills)</i> <ul style="list-style-type: none"> • <i>application of subject knowledge and understanding</i> • <i>research skills – analysis and evaluation</i> • <i>interpersonal skills – negotiation and collaboration</i> • <i>planning: time, resource and information management</i> • <i>independent learning – autonomy and challenge in own learning</i> • <i>problem solving – critical thinking: logical and creative approaches</i> • <i>presentation skills</i> • <i>self evaluation – recognition of own skills development and future areas for development</i> 									

Assessor feedback to candidate

Assessor feedback to candidate			
Proposal approved		Further work required	
Candidate signature			Date
Assessor signature			Date

Science: Interdisciplinary Project

Plan

Candidate name									
SCN									
Centre name									
Assessor name									
Project title									
Is this a group project? yes <input type="checkbox"/> no <input type="checkbox"/>									
If a group project my individual role or responsibilities will be:									
Timescales (<i>this should be a detailed timeline and any separate spreadsheets or charts should be included as evidence</i>)									
Planning (<i>how you are going to meet the agreed objectives of your project</i>)									
Resources (<i>eg people, materials, places</i>)									
Research methods (<i>eg contacting companies, surveys, focus groups, experimentation</i>)									

Presentation

- **Who do I think will benefit from listening/reading/looking at my presentation of my project findings/product?**

- **What methods are appropriate to my audience(s)** (*eg demonstration, presentation software, websites, oral, report, piece of theatre, dvd, wiki/blog or any combination*)

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

Contingencies	
Any anticipated problems	My plans for overcoming the anticipated problems.

Method for recording my skills development and future areas for improvement

Assessor feedback to candidate

Plan approved		Further work required	
Candidate signature	Date		
Assessor signature	Date		

Science: Interdisciplinary Project

Progress log

Candidate name									
SCN									
Centre name									
Assessor name									
Project title									
<p><i>You may use this form to record and reflect on progress with your project. Keeping an ongoing record will help prepare you for progress meetings with your teacher/lecturer, your presentation and final evaluation. Things you might want to record are:</i></p> <ul style="list-style-type: none"> <i>• what you have done (eg from one week to the next)?</i> <i>• what skills have you used and how you feel they have developed?</i> <i>• if you are working in a group, what discussions you have had?</i> <i>• any changes that you have (or will need) to make to your plans and reasons why</i> <i>• what resources you have found/hope to find?</i> <i>• any problems you are encountering and how you are resolving them</i> <i>• what you are going to do next?</i> 									
Date	Comments								

Science: Interdisciplinary Project

Record of Interim Review to be completed by candidate and teacher/lecturer

(This should not be submitted to SQA but is a very valuable opportunity for you to discuss progress with your teacher/lecturer.)

Candidate name										
SCN										
Centre name										
Assessor name										
Project title										
My progress (<i>describe what you have done so far and how it meets your plan eg changes, successes, difficulties encountered, how you resolved issues, targets met</i>)										
My skills (<i>What skills have you used and how far have they developed?</i>)										
My next steps										
Assessor feedback to candidate										
Candidate comments										
Candidate signature							Date			
Assessor signature							Date			

Science: Interdisciplinary Project

Presentation of Project Findings/Product

Candidate name	
SCN	
Centre name	
Assessor name	
Project title	

How I presented my project findings (*describe in detail how you presented your project findings and explain the choices you have made with regard to your presentation method(s) and audience(s)*)

Assessor feedback to candidate

Candidate signature		Date	
Assessor signature		Date	

Science: Interdisciplinary Project

Evaluation of project

Candidate name										
SCN										
Centre name										
Assessor name										
Project title										
How successful has my project been overall? <i>(consider the strengths, weaknesses and learning points of your planning, implementation and findings/outcomes giving examples to support your comments)</i>										
How effective were my communication methods throughout the project?										
Is there any aspect of my project that could be taken further? What might my next steps be?										
Candidate signature							Date			
Assessor signature							Date			

Science: Interdisciplinary Project

Self evaluation of generic and cognitive skills development

Candidate name									
SCN									
Centre name									
Assessor name									
Project title									

In evaluating your skills consider the skills analysis which you carried out at the Proposal stage and how you said you would develop and improve these skills. Now refer to your reflective diary/log/blog and feedback you have received and evaluate how you have developed and/or improved these skills through the work on your Interdisciplinary Project.

Application of subject knowledge and understanding

(Think about practical uses for the science you have learned. How did you use your knowledge of science/technology effectively to help you carry out various aspects of your project and how it related to your chosen broad context(s)?)

Research skills – analysis and evaluation

(Think about the research process. How did you plan, carry out, analyse and evaluate your research? You should evaluate your research methodologies, tools, resources and contacts, data recording and referencing, reliability and usefulness of data.)

Interpersonal skills – negotiate and collaborate

(Think about how you considered other peoples' views/feedback, discussed issues of concern, reached a solution where needed, adjusted your approach in response to a situation/environment, showed positive self belief and had the confidence to offer and ask for support.)

Planning – time, resource and information management

(Think about your time management. How did you set targets, monitor/record progress, consider any probable barriers to achievement and take steps to minimise them?)

Independent learning – autonomy and challenge in own learning

(Think about how you used your skills to make things happen, took the initiative to establish links with other learning environments/opportunities and looked for challenges rather than taking the easy option.)

Problem solving – creative approaches; critical thinking; logical approaches

(Think about your problem solving skills. How did you generate and explore ideas, use logical and creative approaches, analyse source materials in order to support findings, reflect on problems and possible contributory factors and think critically about possible actions/changes?)

Presentation skills

(Think about how you presented your findings. Evaluate your presentation method(s), choice of audience(s), layout, structure, degree of formality and choice of content. Did your presentation include information/ideas/reflections with supporting detail in a logical order and reach a reasoned conclusion?)

Self evaluation – recognition of own skills development and future areas for development

(Think about how you have developed throughout your project. How did you deal with feedback, praise, setbacks and criticism and their impact on your own development of knowledge, skills and understanding? To what extent did you ask for feedback, learn from experiences and how will you use these to inform future progress?)

This section is not mandatory. It has been included to allow you the opportunity to undertake an overall reflection of your project.

Reflection on my experiences throughout this project (*eg things you feel you have achieved, things you have done that you feel particularly proud of, anything you would do differently were you to do something similar in future*)

Skills that I have used in this project that I would like to develop further (*eg using skills in even more challenging situations, more working on your own, more team working*)

Science: Interdisciplinary Project

Assessor Report

Candidate name _____

Candidate number _____

Centre _____

Project proposal	Tick as appropriate
Grade C criteria	
The title and aims of the project.	
Clear aims and reasoned arguments to support the relevance and practicability of the project.	
Identification of opportunities for:	
• own skills development	
• collaborative working	
• accessing less familiar learning environments	
• application of science subject knowledge in a broad context	
• use of knowledge and skills across different disciplines	
• making connections between subject knowledge and the wider world	
Evidence of the ability to communicate clearly and concisely in advocating the proposal.	
Grade A criteria, includes all of above plus	
Well conceived proposal which sets creative and challenging goals which are at the same time realistic, achievable and practicable.	
Robust and carefully argued justification of the proposal.	
Substantial links and understanding of possible connections across disciplines contributing to the project.	
Comments	

Project plan	Tick as appropriate
Grade C criteria	
Development of clear project objectives in line with the project proposal.	
Relevant and detailed planning strands to enable the project to be implemented, monitored, presented and evaluated.	
Realistic timescales and achievable milestones for each stage of the project.	
Clear identification of resources needed, research methodologies to be used, opportunities for support and feedback.	
Grade A criteria, includes all of above plus	
Careful selection and effective use of research/investigation techniques.	
Anticipation of probable and possible factors which may impact on the project.	
Clear identification of dependencies or reliance on the success of other strands of work and of necessary adjustments to the plan.	
Outline the process for achieving own identified development needs.	
Comments	

Presentation of project findings/product	Tick as appropriate
Grade C criteria	
Evidence of effective and critical use of — resources, research methodologies, information and time management, prioritisation, problem solving approach to reach objectives, feedback, collaborative approaches, self monitoring.	
Application of specialist and interdisciplinary subject knowledge to establish meaningful connections within the broad context.	
Clear presentation of main findings/outcomes.	
Grade A criteria, includes all of above plus	
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.	
Skilful and creative use of resources, including people, information and learning context to progress the project.	
Accurate and deepening of understanding through application of subject knowledge in the chosen context, with meaningful connections well established.	
Comments	

Evaluation of project	Tick as appropriate
Grade C criteria	
A critical and justified evaluation of all stages of the project process — planning, implementation and findings/outcomes in terms of strengths, weaknesses and learning points.	
Effective use of chosen communication method(s).	
Grade A criteria, includes all of above plus	
Incisive, well balanced evaluation of the project outcome against project aims, supported convincingly by well selected evidence.	
Careful choice and skilful use of communication and presentation methods(s).	
Comments	

Self evaluation of generic/cognitive skills development	Tick as appropriate
Grade C criteria	
A critical evaluation of own skills development against the list of specified generic/cognitive skills.	
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.	
Grade A criteria, includes all of above plus	
Insightful, balanced and well structured self evaluation of own development.	
Assertive and justified use of feedback from others in evaluation and identification of development areas.	
Comments	

Section 11

Assessment tools

Assessment tools

This section gives some examples of recording documents which could be used by candidates and/or assessors to gather evidence and record assessment decisions.

Summary checklist

For recording candidate progress throughout the Interdisciplinary Project.

Class checklist

For recording the grading decisions for each candidate on a single form.

Science: Interdisciplinary Project

Summary checklist

Candidate name _____

Candidate number _____

Centre _____

Evidence	Date achieved
Project proposal.	
Project plan.	
Interim review discussion.	
Presentation of project findings/product.	
Evaluation of project.	
Self-evaluation of generic/cognitive skills development.	

Assessor signature _____

Date _____

Science: Interdisciplinary Project

Class assessment checklist

Class _____ Teacher/lecturer _____

	Candidate surname	Candidate forename	Candidate SCN	Mandatory evidence completed					Overall grade awarded				
				1	2	3	4	5	A	B	C	U	
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
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20													