



الأكاديمية الدولية - عمان  
THE INTERNATIONAL ACADEMY - AMMAN

# PERSONAL PROJECT HANDBOOK

2020 – 2021

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# IB learner profile

The aim of all IB programmes is to develop internationally minded people who, recognizing their common humanity and shared guardianship of the planet, help to create a better and more peaceful world.

As IB learners we strive to be:

### **INQUIRERS**

We nurture our curiosity, developing skills for inquiry and research. We know how to learn independently and with others. We learn with enthusiasm and sustain our love of learning throughout life.

### **KNOWLEDGEABLE**

We develop and use conceptual understanding, exploring knowledge across a range of disciplines. We engage with issues and ideas that have local and global significance.

### **THINKERS**

We use critical and creative thinking skills to analyse and take responsible action on complex problems. We exercise initiative in making reasoned, ethical decisions.

### **COMMUNICATORS**

We express ourselves confidently and creatively in more than one language and in many ways. We collaborate effectively, listening carefully to the perspectives of other individuals and groups.

### **PRINCIPLED**

We act with integrity and honesty, with a strong sense of fairness and justice, and with respect for the dignity and rights of people everywhere. We take responsibility for our actions and their consequences.

### **OPEN-MINDED**

We critically appreciate our own cultures and personal histories, as well as the values and traditions of others. We seek and evaluate a range of points of view, and we are willing to grow from the experience.

### **CARING**

We show empathy, compassion and respect. We have a commitment to service, and we act to make a positive difference in the lives of others and in the world around us.

### **RISK-TAKERS**

We approach uncertainty with forethought and determination; we work independently and cooperatively to explore new ideas and innovative strategies. We are resourceful and resilient in the face of challenges and change.

### **BALANCED**

We understand the importance of balancing different aspects of our lives—intellectual, physical, and emotional—to achieve well-being for ourselves and others. We recognize our interdependence with other people and with the world in which we live.

### **REFLECTIVE**

We thoughtfully consider the world and our own ideas and experience. We work to understand our strengths and weaknesses in order to support our learning and personal development.

## PP Timeline for Class of 2021

On or before April 6th	<ul style="list-style-type: none"> <li>●<b>Submit initial Proposal on google classroom</b></li> </ul>
On or before May 3rd	<b>First meeting with supervisor (Student presents 4 PJ extracts)</b> <ul style="list-style-type: none"> <li>- Brainstorming PJ</li> <li>- Discuss project proposal and receive feedback</li> </ul>
May 10th	<b>Academic Integrity Form</b> Fill in main points for Meeting 1
On or before May 18th	<b>Second meeting with supervisor to discuss Proposal</b> Discuss timeline and success criteria
May 19th	<b>Complete Progress Report</b> <b>Update Academic Honesty Form</b> Fill in main points for Meeting 2
May 20th	<b>Students submit on Google Classroom and supervisors provide feedback</b> <b>Final Project Proposal</b> PJ entry: Timeline PJ entry: Success Criteria PJ entry: 2 OPVLs PJ entry: Prior knowledge, prior skills
May 21 <sup>st</sup>	<b>Progress Report Out to Parents</b>
Before June 14th	<b>Third meeting with supervisors to discuss entries</b>
SUMMER BREAK	<b>Work to be completed</b> <ul style="list-style-type: none"> <li>- Research Completed</li> <li>- Product Creation / Outcome completed</li> <li>- Action Plan Modified</li> <li>- Process Journals completed</li> </ul>
By or before Sept 21 <sup>st</sup>	<b>Third Meeting with Supervisor</b> To discuss Process Journals
Sept 22 <sup>nd</sup>	Product / Outcome completed and submitted to PP Coordinator by 8am
Sept 29 <sup>th</sup>	Submit Process Journal Extracts to Supervisor
On or before Oct 6 <sup>th</sup>	<b>Fourth Meeting with Supervisor</b> selection of extracts from process journal
On or before Nov 5 <sup>th</sup>	<b>Fifth Meeting with Supervisor</b> Meeting with supervisors to discuss draft writing progress

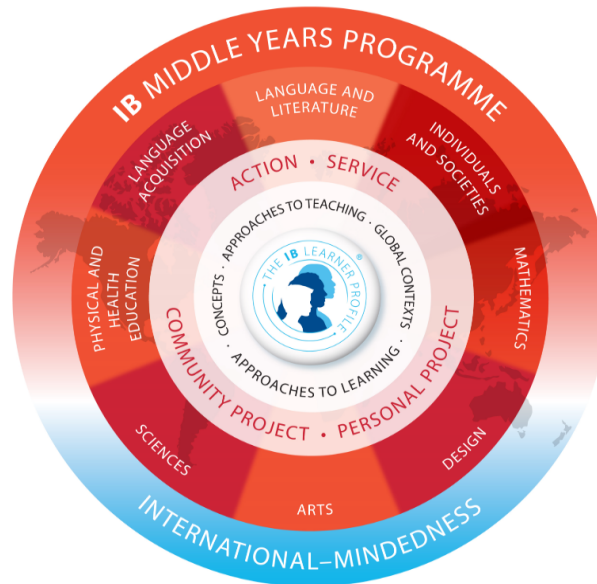
Nov 23 <sup>rd</sup>	<b>Full Draft Report with all Process Journals by 8am</b> – submit on Moodle Turn-it-in and email it to Supervisor
On or before Dec 10 <sup>st</sup>	<b>Supervisors give feedback on full draft report</b>
On or before Dec 13 <sup>th</sup>	<b>Update Academic Integrity Form</b> - Fill in main points for the 3 most significant Meeting
10 Dec -14 Jan	<b>Meeting with Supervisors to discuss draft feedback</b>
15 Dec	<b>PP Exhibition - compulsory</b>
Jan 28 <sup>th</sup>	<b>Final Report and Academic Honesty Form Due by 8am</b> – submit on Moodle Turn-it-in and 1 hard copy to PP Coordinator by 8am

**Report writing for students Dec 10<sup>th</sup> – Jan 27<sup>th</sup>**

*Click on page number to return to  
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## Aims of the Personal Project

The Personal Project occupies a central position in the MYP framework as shown below.



In this independent study, you choose a topic that matters to you. You define a goal and work towards accomplishing that goal, with the help of an adult supervisor. *The aims of the MYP Personal Project allow you to:*

- ❖ *research topics that are relevant to you within a Global Context*
- ❖ *demonstrate the skills, attitudes and knowledge that you need to complete a project over an extended period of time*
- ❖ *develop deeper understandings through in-depth investigation*
- ❖ *reflect on your learning and knowledge*
- ❖ *communicate effectively in a variety of situations*
- ❖ *appreciate the process of learning and develop confidence as a lifelong learner*
- ❖ *engage in principled action.*

Throughout the project, you have to focus on the completion of three essential components - the Process Journal, the Product/Outcome and the Report.

### Process Journal

A place for...  
Brainstorming  
Planning  
Recording interactions with sources  
Important ideas  
Reflection

### Product / Outcome

Based on your goal  
Evaluate based on your success criteria  
Can have multiple formats – you decide!

### Report

A specific format  
Includes 10 PJ extracts  
Contains evidence that you met assessment criteria  
Reflection of entire process

## Overview of the Project

### 1. Investigating

Start using your Process Journal...use it throughout  
Brainstorm to identify a suitable topic that YOU are interested in  
Identify a record relevant prior learning and subject knowledge  
Identify ONE Global Context, which you will focus on  
Formulate a challenging, realistic goal that YOU can accomplish  
Determine your product / outcome  
Find reliable, relevant sources to conduct your research

### 2. Planning

Continue your research  
Create success criteria to evaluate your product / outcome  
Develop an action plan to create product / outcome  
Record all process in the Process Journal

### 3. Taking Action

Analyse and evaluate information –  
Why does this information matter? How is it relevant to my goal?  
Transfer and apply your research to your goal by:  
making decisions, creating solutions, developing understanding  
Create the product / outcome defined by your goal

### 4. Reflecting

Evaluate the product / outcome using your success criteria  
Explain how the project extending your knowledge/understanding of the topic and global context  
Explain how completing the project made you grow as a learner  
Explain how what you have learned has impacted your attitudes and behaviour

### 5. Writing the Report

Use your Process Journal to write the report  
Follow the required format  
Write clearly and concisely  
Include 10 PJ extracts in the Appendix – one of which includes photo of project

## The Relationship with Your Supervisor

The relationship you have with your supervisor is one of the key ingredients to a successful personal project. This is **YOUR** project. You can:

- 1. Meet the scheduled number of times and / or**
- 2. Meet at other times when you are both free.**

### Your responsibilities:

- Negotiate and agree on regular meeting times with your supervisor
- Attend (punctually) meetings with your supervisor
- Manage your time and organize your work
- Work independently to prepare work for the next scheduled meeting
- Ask your supervisor questions and seek help when you need it
- Keep the Academic Honesty Form (AHF) updated and signed
- Maintain your Process Journal
- Adhere to the PP assessment criteria when writing your report.

### Supervisor's responsibilities:

- Negotiate and agree on regular meeting times with your student(s)
- Monitor student's time management, organization and project progress
- Monitor student work to ensure it meets assessment standards
- Communicate areas of strength and improvement needed to students
- Provide guidance, support, encouragement and reassurance
- Confirm the authenticity of the work submitted by signing AHF
- Check during meetings for Process Journal status
- Inform PP Coordinator about progress.

## Library Support

There are a wide range of school resourced databases that give you access to research that can support your inquiry. The librarians will help you to:

- Find resources
- Reference sources using MLA and accurately use in-text citations

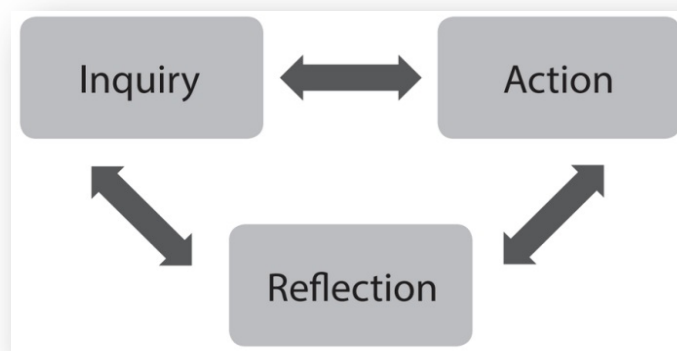
Criterion A of the Personal Project requires that you demonstrate your research skills. You will need to apply Information and Media literacy skills, especially to:

- Find information in different media (remember to use varied and relevant sources)
- Reference and apply in-text references accurately and construct a Works Cited list according to recognized conventions (at IAA we use the MLA-7 system)
- Identify primary and secondary sources
- Evaluate and select information sources and digital tools based on their appropriateness to specific tasks.



## Choosing the Goal

The Personal Project follows the Inquiry Cycle seen below:



In the Inquiry Phase, you should ensure that you fully explore a topic that will engage you for the next 7 months. It is through this exploration of the topic you will determine the goal. Goals are critical to the final outcome of your project and its overall assessment so you will need to consider whether your goal is challenging or highly challenging.

Here are some examples of goals and the differences between a challenging and a **highly** challenging goal.

Challenging	Highly Challenging
Mariam documents her self-taught skills in photography.	Mariam documents her neighborhood through a photography exhibition.
Paul creates a durable bag using second-hand materials.	Paul creates a range of bags using second-hand materials to exhibit at the local arts centre.
Ahmed writes an article on a topic of interest for a journal (school/academic/special interest) and submits it to an audience.	Ahmed writes and publishes an original book-length feature on a topic of interest.

Adapted from: From Principles into Practice IB 2014

Consider what made each goal highly challenging and apply those thoughts to your current goal. A highly challenging goal will ensure that you reach your maximum potential and allow you to develop stronger ATL skills, useful for your progression in the Diploma Programme.

Here are sample goals:

Goal (what you want to achieve)	Product / Outcome (how you will demonstrate achievement of your goal)
My goal is to express my thoughts and emotions regarding the central theme of heartbreak while narrating my personal experience through writing.	This will be done by creating a book consisting of 10 of my personal pieces (including prose and poetry) accompanied by my own photography, edited based on the mood my poems exude.
My goal is to explore the engineering field while enhancing my design skills and acquiring new technical skills by creating a functional prototype for a drone that can be replicated.	The drone will be able to scan crops in a field and spray pesticides where needed
My goal is to enhance my knowledge and inform my school community on retinitis pigmentosa.	I will write a fictional book that will include elements of nonfiction woven throughout about a young woman suffering from it.

Write your goal by starting with...

- To offer a solution
- To inform
- To direct
- To compose
- To explore
- To write and publish



## Global Context

Consider the following questions as you choose the ONE Global Context through which to focus your project.

**What do I want to achieve through my project?**

**What do I want others to understand through my work?**

**What impact do I want my project to have?**

**How can a specific context give greater purpose to my project?**

Global Context	Possible Explorations	Examples of Personal Projects
<p><b>Identities and relationships</b></p> <p>Who am I? Who are we?</p> <p>Students will explore identity; beliefs and values; personal, physical, mental, social and spiritual health; human relationships including families, friends, communities and cultures; what it means to be human.</p>	<ul style="list-style-type: none"> <li>• competition and cooperation; teams, affiliation and leadership</li> <li>• identity formation, self-esteem, status, roles and role models</li> <li>• personal efficacy and agency; attitudes, motivations, independence; happiness and the good life</li> <li>• physical, psychological and social development, transitions, health and well-being, lifestyle choices</li> <li>• human nature and human dignity, moral reasoning and ethical judgment, consciousness and mind</li> </ul>	<ul style="list-style-type: none"> <li>• Two sides of social networking; an awareness campaign about digital citizenship / cyber bullying.</li> <li>• How online identities impact offline relationships; a research essay.</li> <li>• Keeping culinary traditions; a video series following family recipes with historical relevance.</li> <li>• Effect of media on teenage identity; a short film.</li> </ul>
<p><b>Orientation in space and time</b></p> <p>What is the meaning of when and where?</p> <p>Students will explore personal histories; homes and journeys; turning points in humankind; discoveries; explorations and migrations of humankind; the relationships between and the interconnectedness of individuals and civilizations from personal, local and global perspectives.</p>	<ul style="list-style-type: none"> <li>• civilizations and social histories, heritage; pilgrimage, migration, displacement and exchange</li> <li>• epochs, eras, turning points and 'big history'</li> <li>• scale, duration, frequency and variability</li> <li>• peoples, boundaries, exchange and interaction</li> <li>• natural and human landscapes and resources</li> <li>• evolution, constraints and adaptation</li> </ul>	<ul style="list-style-type: none"> <li>• The Euclidean space perspective of the universe; a 3D model.</li> <li>• Explorers in search of a new world; immigration over the ages through visual texts.</li> <li>• The Mayflower and the dream of religious freedom; a personal family history.</li> <li>• Charting a family history through archives and a representational statue.</li> </ul>

<p><b>Personal and cultural expression</b></p> <p>What is the nature and purpose of creative expression?</p> <p>Students will explore the ways in which we discover and express ideas, feelings, nature, culture, beliefs and values; the ways in which we reflect on, extend and enjoy our creativity; our appreciation of the aesthetic.</p>	<ul style="list-style-type: none"> <li>• artistry, craft, creation, beauty</li> <li>• products, systems and institutions</li> <li>• social constructions of reality; philosophies and ways of life; belief systems; ritual and play</li> <li>• critical literacy, languages and linguistic systems; histories of ideas, fields and disciplines; analysis and argument</li> <li>• metacognition and abstract thinking</li> <li>• entrepreneurship, practice and competency</li> </ul>	<ul style="list-style-type: none"> <li>• Video games as a form of cultural expression; a short film using five video games that shows how they are an expression of our culture.</li> <li>• Art of Manga in Japanese culture; a Japanese anime and a survey of the understanding of my peers.</li> <li>• Culture and self-expression through dance at the local community arts centre; a performance.</li> </ul>
<p><b>Scientific and technical innovation</b></p> <p>How do we understand the world in which we live?</p> <p>Students will explore the natural world and its laws; the interaction between people and the natural world; how humans use their understanding of scientific principles; the impact of scientific and technological advances on communities and environments; the impact of environments on human activity; how humans adapt environments to their needs.</p>	<ul style="list-style-type: none"> <li>• systems, models, methods; products, processes and solutions</li> <li>• adaptation, ingenuity and progress</li> <li>• opportunity, risk, consequences and responsibility</li> <li>• modernization, industrialization and engineering</li> <li>• digital life, virtual environments and the information age</li> <li>• the biological revolution</li> <li>• mathematical puzzles, principles and discoveries</li> </ul>	<ul style="list-style-type: none"> <li>• Nano fibres build stronger bikes; a prototype bike with nano fibres.</li> <li>• What's the matter with the anti-matter? an informational talk.</li> <li>• Why are genetics and genomics important to my health? a media presentation.</li> <li>• Can stem cells replace organ transplants? an investigative report.</li> </ul>
<p><b>Globalization and sustainability</b></p> <p>How is everything connected?</p> <p>Students will explore the interconnectedness of human-made systems and communities; the relationship between local and global processes; how local experiences mediate the global; the opportunities and tensions provided by world interconnectedness; the impact of decision making on humankind and the environment.</p>	<ul style="list-style-type: none"> <li>• markets, commodities and commercialization</li> <li>• human impact on the environment</li> <li>• commonality, diversity and interconnection</li> <li>• consumption, conservation, natural resources and public goods</li> <li>• population and demography</li> <li>• urban planning, strategy and infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• The struggle for water in developing countries; an awareness campaign.</li> <li>• The impact of the financial crises of Europe and the European Economic Community on the United States; a visual presentation.</li> <li>• Education as the tool to change the future of Peru; a workshop for adults.</li> <li>• The role of the developing countries in protecting the tropical rain forest; a collection of slides.</li> </ul>

<p><b>Fairness and development</b></p> <p>What are the consequences of our common humanity?</p> <p>Students will explore rights and responsibilities; the relationship between communities; sharing finite resources with other people and with other living things; access to equal opportunities; peace and conflict resolution.</p>	<ul style="list-style-type: none"> <li>• democracy, politics, government and civil society</li> <li>• inequality, difference and inclusion</li> <li>• human capability and development; social entrepreneurs</li> <li>• rights, law, civic responsibility and the public sphere</li> <li>• justice, peace and conflict management</li> <li>• power and privilege</li> <li>• authority , security and freedom</li> <li>• imagining a hopeful future</li> </ul>	<ul style="list-style-type: none"> <li>• Supporting fair trade: cocoa trade in Ghana; an awareness campaign for our school restaurant/cafeteria to promote fair trade.</li> <li>• Open-market economies and their role in fair trade; a talk for students.</li> <li>• Exploring the intersections of race and inequality; a radio broadcast.</li> <li>• Asylum seekers and their right to live like us; a painting.</li> </ul>
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## Types and Evaluation of Sources

To demonstrate excellent research skills, you must:

- Use a wide variety of sources.
- Consider limitations and strengths of the sources as well as author bias, and evaluate based on the goal of the project.
- Cite all relevant information in text...MLA
- Collect and analyze data to identify solutions and making informed decisions to further the project.
- Organize, analyze, evaluate, synthesize information

Types of sources include...

Blogs	Encyclopedias	Books and textbooks
Letters	Fieldwork, experiment	Paintings / Photos / Instagram
Interviews (face to face, skype, email, twitter)	Radio, TV broadcasts, podcasts, speeches, songs	Research published in scholarly/academic journals
Newspapers	Film and documentaries	Surveys
Popular magazines (e.g. People, Rolling Stone)	General interest magazines (e.g. Newsweek, Times)	Scholarly journals (peer-reviewed)
Subject notes / resources from teachers	Brochures	Case studies

When evaluating sources, you must look at the following:

### Authority

Who has provided this information?

Can you check their qualifications?

Is the information from an 'expert' in this field?

### Accuracy

Is the information accurate?

Can it be proven and verified? If yes, how?

### Objectivity / Bias

Is the information based on facts or based more on opinions and emotions?

Is it from just one point of view?

Is there personal bias?

### Currency

How old is the information and is this important?

Has the information been revised or updated, and if so, when?

### Evaluating sources within the report:

<p>Arduino platform is an open source available to everyone for free use, has accessible hardware like microcontrollers, and is a good starter language (refer to Appendix C). The information placed on Arduino's website is created by the employees of the company. It contains tutorials and is updated on a daily basis. It is not entirely objective, as it is a company that promotes its products and language as one that is simple and easy to learn. It is an excellent source as it is a quick guide on programming, understanding the variety of codes available and determining the most suitable microcontrollers.</p>	<p><i>DC motor how it works</i> is an online article containing an animated video published by unnamed authors, but are a division of three people from a larger consulting engineer company known as Imajey Consulting Engineers, with the director, Mathew Sabin supervising the content posted. They are reputable and well-known through a moderate 437,000 subscriber count on YouTube. It was based on the engineers' knowledge of the topics, and it is non-biased due to it solely containing explanations on the fundamentals of a DC motor. The source's flaw is that it does not cover all aspects such as the motor's implementation into circuits. However, it does provide information that relate directly to programming, as it can show what aspects of the motor can be programmed like the spinning direction. It also highlights an inverse relationship between torque and speed, which is needed to formulate the success criteria and embed the motors into the circuit.</p>
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## The Process Journal

Your process journal should have all your rough ideas (even if your ideas change over the duration of the project...as it should), rough drawings, etc. It is a practical workbook. Record your progress in the journal, and use your notes/drawings to reflect on your ideas, achievements, obstacles, etc. All students are expected to maintain their Process Journal on Google Classroom.

The Process Journal is:	The Process Journal is not:
<ul style="list-style-type: none"> <li>• used throughout the project to document its development.</li> <li>• to be kept up to date - record dates of action.</li> <li>• an evolving record of intents, processes, accomplishments.</li> <li>• a place to record initial thoughts and developments.</li> <li>• brainstorming, possible lines of inquiry and further questions raised.</li> <li>• a place for recording interactions with sources e.g. teachers, supervisors, external contributors.</li> <li>• a place to record selected, annotated and/or edited research and to maintain a bibliography</li> <li>• a place for storing useful information e.g., quotations, pictures, ideas, photographs.</li> <li>• a means of exploring ideas and solutions.</li> <li>• a place for evaluating work.</li> <li>• a place for reflecting on learning.</li> <li>• a record of reflections and formative feedback received.</li> </ul>	<ul style="list-style-type: none"> <li>• used on a daily basis (unless this is useful for the student).</li> <li>• written up after the process has been completed.</li> <li>• additional work on top of the project; it is part of and supports the project.</li> <li>• a diary with detailed writing about what was done.</li> <li>• a static document with only one format.</li> </ul>

The Process Journal should include as relevant to the project topic:

- Annotated research
- Annotated illustrations
- Annotated Photos
- Plans, timelines
- Designs, sketches, graphs, charts
- Interviews, surveys, questionnaires
- Letters, emails
- Costs, invoices, receipts
- Results of surveys

Here are some headings you could use to structure the entries of your journal.

- **Criteria and associated strand**
- **Work completed this week**
- **Resources consulted** – you can record bibliographical details in this section. Resources include websites, journals, newspapers, magazines, blogs, videos, interviews, surveys, etc..
- **Challenges / difficulties faced** – also indicate how you did or intend to deal with them.
- **Evaluation of progress** – This is where you should refer to your initial goals and indicate whether or not you are achieving them. You may also identify any areas that need improvement at this stage.
- **ATL skills** – summary of skills that you used

## Sample Process Journal Entry

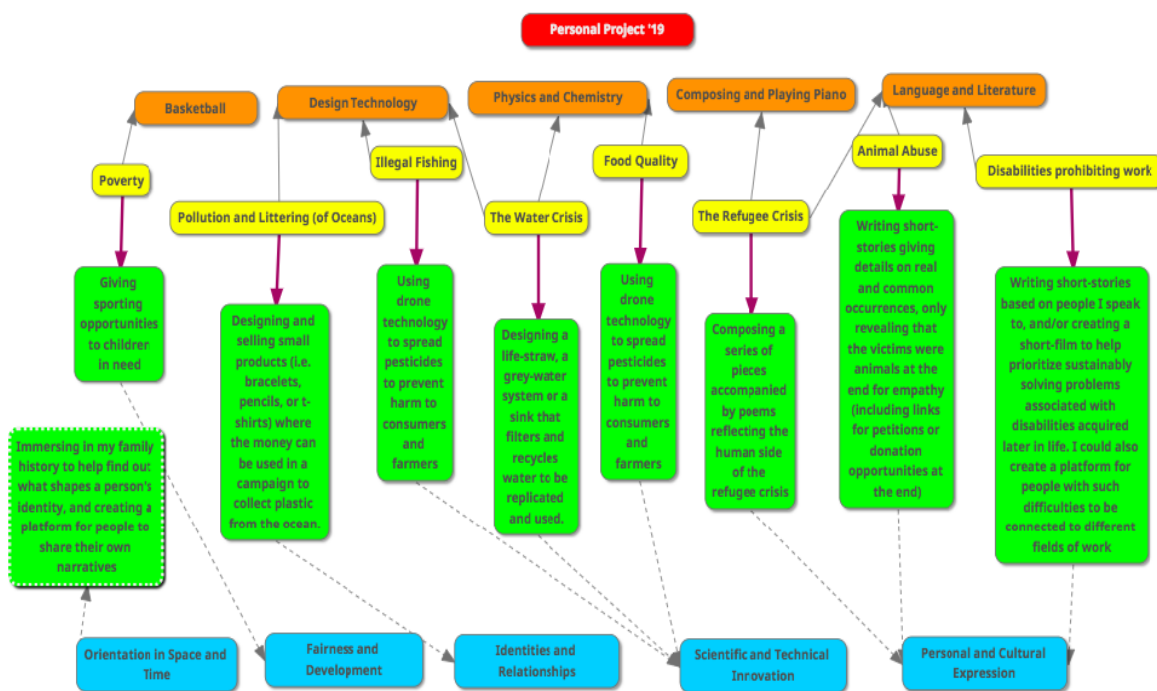
### Personal Project Investigation: Strand i

Process Journal #1 - **Appendix A:** Brainstorm... 22/3/18:

*SOI: What will my project be about? How will I choose a topic that is personal to me?*

The first time I heard about the MYP's requirement of each tenth grader to complete a "Personal Project", I was in the sixth grade. Even then, I was doubtful I would decide on what I wanted that project to encompass before I was pounded with deadlines. In the February of 2018 Mr. Donald introduced the topic to us.

Taking Spanish as an extra subject forced me to miss three personal project sessions, and so by the time I had met with my supervisor, Miss Hala, for the first time, I was still without a goal. She then told me to write a list of the first problems that pop into my head that I want to try to solve, and then to list my talents, passions, or school subjects that I enjoy. I could then match them up. Combined with Mr. Donald's advice to create a mindmap, and my Dad's explanation about the "X point of disruption", I was able to come up with multiple projects.



It began with writing all my interests in orange bubbles, and writing issues I wanted to solve in yellow. Once matched, a solution was created that focused on the X point of disruption; one which solved the problem while including my interest. Solutions were written in green bubbles. Finally, blue bubbles on the bottom displayed the MYP Global Contexts, and these inspired me to think of projects that did not involve solving a problem at all (such as on the far left).

>ATL Skills	
Thinking Skills (IX Creativity and Innovation)	This skill was used in brainstorming my ideas in a mind-map and using lateral thinking to make unexpected connections between my interests and the problems I wanted to solve.
Thinking Skills (VIII Critical thinking)	I showed this skill by proposing my ideas after evaluating the situation of my country, Jordan, and proposing solutions.

#### Things to think about:

- Which topic would interest me most? How does each topic have personal relevance to me? Which topic would be challenging yet achievable?
- How can I write a SMART goal (specific, measurable, achievable, relevant, timely)?



## Personal Project Planning: Strand iii

### Appendix F: Process Journal #9 – 1/9/18

SOI: How am planning to persist through the challenges I will face? What challenges have I overcome so far?

**Task**

- Brushless motor vs DC motor
- Why we use brushless motor in quadcopters
- What is ESC function? and its
- Report on Agricultural Drone
- Mission (3-5 pages) problem, solutions, spr

I used a small notebook to plan very specific tasks to manage my time and avoid last-minute stress.

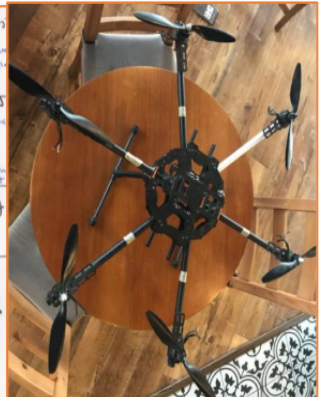
**To-do List**

- 1) Finish Reports:
  - Brushless Motor
  - LiPo Battery
- 2) Answer Project Proposal Qs
- 3) Read Pesticide Drone Proposal
- 4) Start Working on Mission Planner
  - Story for Project
  - Objective
  - Description about technology chosen
- 5) Part Selection

\*  $W_T = W_{ppl} + W_{Bowl} = W_T + W_{Bowl}$   
 $= 1000g + (600g + 300g)$   
 $= 1900g = 2000g$

$Treq/Arms = \frac{W_T}{8} * 1.43$   
 $\frac{2000}{8} * 1.4 = 466.6g$   
 $\approx 500g$

This # means the min. # Required  
 Thrust per motor must be at least  
 1500 gram      4700 - 5000



$T_W = A * W_p + W_p + W_{Bowl}$   
 Substitution  
 $W_p = W_p + W_{Bowl}$   
 Drone weight      Same Unit      Building

$T_W = 2000g = 2000g$

Helicopter # / Ms 6

$T_{req} = \text{Thrust Required per motor}$

$T_{req} = T_W / 8 * 1.5$   
 i.e. number of motor

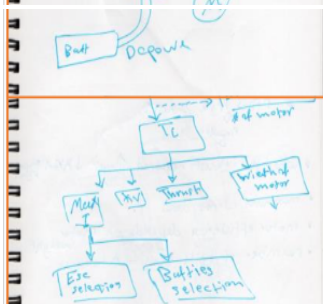
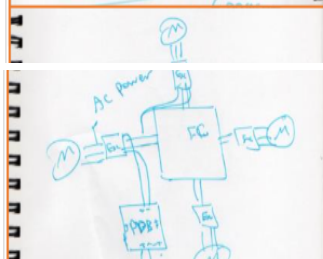
### Despite this, I faced many challenges during the project.

- A test-drone was created for practice (top right), and to test the code written by my mentor. The drone could fly, but would spin in the air. This was because the motors all spun in random directions. To fix this, I rewired the drone several times to no success, however when consulting my mentor, he informed me of a small machine for calibrating the drone to change the direction the motor spins. I needed each diagonally opposite motor to spin in opposing directions for torque balance.

- In the summer, I was not in the country, but my mentor insisted continuing work on the drone without me. I found this to be a major problem, however through emotional management and discussion we discussed that he could write the code for the drone, as I had not learnt that yet anyway, and I would buy the chosen materials from the USA where I was travelling and come back to build the hardware. Since I had not learnt coding yet and I was not on schedule according to my action plan, the solution fixed both problems.

- Another problem I faced was anxiety and self-consciousness restricting my ability to collaborate and communicate with my mentor, and with others including my supervisor and farmers. I delayed speaking to them, however eventually overcame my anxiety through mindfulness, although this cost me a lot of time. I was also a perfectionist with regards to writing reports and/or process journals which caused me to waste time on them.

- I avoided making rash decisions throughout my project to avoid wasting money as costs were high, and so made many calculations and drawing to plan out my action in a detailed method to avoid mistakes.



#### ATL Skill: Self-Management - Organization

I kept and used a weekly planner for assignments to keep me on track. I also productively used technology to test my drone.

#### ATL Skill: Self-Management – Affective Skills

I faced many challenges, but overcame them through perseverance and resilience, and practiced bouncing back after failure. Through self-motivation I analyzed causes for failure and thought positively to fix them.

## Personal Project Pitch

Be prepared to discuss the answers to the following questions during your PP pitch.

1. State your goal. This statement should include your topic and Global Context.
2. State your product / outcome.
3. State your Global Context and associated exploration and justify your choice.
4. Explain the MYP Subject(s) that your goal is linked to and what prior knowledge will you use.
5. List some of the primary and secondary sources you will be relying on to gather your research. (*You will need at least 5 sources*)
6. Outline the challenges that you might encounter along the way.
7. Present your action plan.



## Success Criteria

You must...

- clearly define specific criteria of a high-quality product/outcome
- ensure that success criteria are informed by highly relevant research
- make sure success criteria are measurable

The criteria should be determined once you have a clear understanding of what you want to achieve and the proposed product/outcome of your project.

Changes in the criteria can be made during the process of planning and taking action. However, you need to explain the nature and purpose of changes in the criteria in the Process Journal.

Guiding questions to determine your success criteria

- What will my outcome or product look like?
- What type of materials will I use?
- What techniques will I use?
- What type of information will I include?
- How will I present the product?
- Will I include visuals?
- Do I need to consider any copyright or intellectual property issues?
- Who is the audience?
- How will I get feedback?

Examples of Criteria for the Product/Outcome

- Form/appearance
- Function/purpose
- Expect cost/budget
- Time allocated/restrictions
- Target group/audience
- New skills to learn and/or and develop
- Available resources and materials
- Specifications - size, dimensions, quantity.

To call your project successful, you will need to measure its success from different angles:

-Have you created a product that meets the <b>product's</b> specifications/success criteria?	Does your product deliver the <b>goal</b> ?	Does your product/project meet the <b>exploration of your Global Context</b> ?
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For example:

The goal is to design a personal fitness programme to prepare for a half-marathon. The project is aiming to increase fitness through a training schedule, with the outcome of running a half-marathon.

The criteria might include a proposed running schedule with interim projected running times, and the final running time the student hopes to achieve in the half-marathon.

The outcome might be documented through a fitness chart, diary entries, running times and a series of photos of the actual marathon.

**Appendix D:**

Planning Strand i - Success Criteria - 28/5/18

Inquiry Question: How will I measure the success of my project? What aspects of my product will have the greatest impact on the community? Which aspects of my product are the most important in achieving my goal?

Descriptor	Criteria	Method of Testing
Manufacture	<ul style="list-style-type: none"> <li>- The scale of the production for the drone will be a single prototype, and this is because of the difficulty of mass producing my product.</li> <li>- Tools will include a 3D printer to print parts in a cost-effective way, and a soldering pen to connect wires.</li> <li>- The manufacturing process must be supervised by an expert who must approve my methods.</li> </ul>	yes/no
Appeal to Audience	<ul style="list-style-type: none"> <li>- Farmers should be spoken to, to learn whether or not the product filled a gap in the market and whether they would consider using the solution (around three farmers.)</li> <li>- It should be simple and effective.</li> </ul>	based on feedback
Properties/ Materials	<p>Properties based on the calculations and evaluations made in previous journals:</p> <ul style="list-style-type: none"> <li>- UAV, Multirotor, Hexacopter</li> <li>- Payload &lt; 10kg; Frame &lt;2500g; Battery = 1kg</li> <li>- Thrust Requirement 3.375g per motor.</li> <li>- Low KV (320-960)</li> </ul> <p>As for the parts, the following measurements/properties will be the most appropriate:</p> <ul style="list-style-type: none"> <li>- Propellor ≥ 10cm (it must be long because the KV is low)</li> <li>- Frame 500x500cm</li> <li>- ESC with 20A current draw (based on the motor selection of EMAX MT2212 II which draws 15A max)</li> </ul> <p>Materials will include PLA for 3D printing, aluminum, wires, and plastic propellers.</p>	yes/no
Function	<ul style="list-style-type: none"> <li>- The drone should be able to autonomously spread pesticides uniformly.</li> <li>- It should be able to fly for 15 minutes minimum; respond to the remote control; collect data.</li> </ul>	timer, qualitative data
Cost	<ul style="list-style-type: none"> <li>- The cost of building should NOT exceed 500 JD</li> <li>- The cost of using the drone as a service should NOT exceed the cost of manufacturing by more than 10% (based on research stating that average income in Jordan is 468.24JDs based on the statistics website Numbeo,) which is too low for higher priced products.</li> </ul>	calculations
Safety	<ul style="list-style-type: none"> <li>- Rate of dispersion of liquid pesticide from the nozzle must be calculated, controlled, constant, and limited</li> <li>- The parts must be of good quality</li> <li>- The drone must have safety regulations</li> </ul>	Risk assessment table

To come up with the appropriate specifications it was necessary that I implement ...

**Social Collaboration skills**, as I listened actively to my expert's perspective and negotiated with him to come up with the most suitable specifications. We shared the responsibility of decision-making. I also needed to apply **organization skills**, as I set challenging and realistic goals, and organized my plans into a table that could later be referred to. I employed **critical thinking skills** as I drew reasonable conclusions based on my calculations, organized the aforementioned relevant information.

## The Action Plan

This is a detailed “to do” list that must include the following information:

- Tasks to be completed
- End dates for each task to be completed
- Resources needed to accomplish a task (name people, resources, etc.)

A possible template to use...

Action Step (What needs to be done)	Deadline (When should this be completed by)	Resources (What is needed to complete this step?)	Potential Challenges (Challenges that may impact completion of this step? How will you overcome it?)	Result (Was this step successfully completed? Were any new steps identified in the process?)



**Appendix E** - Process Journal #8 – Planning Strand ii – The Action Plan

SOI: How will I successfully complete my project within the given time frame?

Date: 1/6/18

Action Step		Deadline	Resources	Potential Challenges	
<b>Investigating</b>					
<b>Step 1: Assess local needs of farmers.</b>	Formulate and brainstorm interview questions	4 <sup>th</sup> June	My Supervisor Farmers Shaker Zaben and Nimer Abu-Jaber	These steps will be completed at around the same time as final examinations are taking place, so dates were made relatively close together to finish before these exams start.  ↓ Planning stage involves learning a lot of new skills, and so must be done over summer. Difficulties with communication and time management will be overcome with self-management.  ↓ A lot of difficulties with making the product are likely, and so the steps were given a lot of time. I will travel during August and this was also considered.  ↓ Since there are rarely exams in November my set deadlines were close to each other to meet the school's deadlines.	
	Get contacts and call them to arrange appointments	28 <sup>th</sup> Oct			
	Interview contacts				
<b>Step 2: Pinpoint specific functions for the drone</b>	Research about biggest problems farmers in Jordan face	7 <sup>th</sup> June	Miss Kathleen (librarian) Online sources		
	Research about existing case studies				
<b>Step 3: Finalize Investigating Process Journals</b>		10 <sup>th</sup> June	My Supervisor		
<b>Planning</b>					
<b>Step 4: Formulate success criteria for the drone</b>	Decide what should be measured	14 <sup>th</sup> June	Drone expert Yousef Amoura My Supervisor		
	Meet with Yousef Amoura to help calculate optimum specifications				
<b>Step 5: Learn how to build the hardware</b>	Meet with the team of Sager-1 regularly	10 <sup>th</sup> July	Yousef Amoura Online Sources Ultimaker 3D printer Soldering pen and wires		
	Research online				
	Write detailed reports on how to select different parts				
	Build small sub-systems to practice				
<b>Step 6: Learn to program software</b>	Learn coding language Arduino online	1 <sup>st</sup> Aug	Codecademy online		
<b>Step 7: Finalize Planning Process Journals</b>		7 <sup>th</sup> Aug	My Supervisor		
<b>Taking Action</b>					
<b>Step 8: Collect the parts</b>	Select compatible parts based on research	31 <sup>st</sup> Aug	Amazon.com 3D printer Google SketchUp Ultimaker Cura application		
	Buy parts online				
	Print remaining parts				
<b>Step 9: Build the drone</b>	Solder wires together to connect parts of system in correct orientation	28 <sup>th</sup> Oct	Printed/bought parts Soldering pen		
	Build the frame of the drone and connect this to the system				
<b>Step 10: Program the drone</b>	Use existing programs found online, and adapt them to serve my function	1 <sup>st</sup> Nov	Open framework found online		
<b>Step 11: Evaluate the drone against the success criteria</b>		2 <sup>nd</sup> Nov	Success criteria		
<b>Step 12: Finalize Taking Action Process Journals</b>		2 <sup>nd</sup> Nov	My Supervisor		
<b>Reflecting</b>					
<b>Step 13: Test drone and record results</b>	Find a farm that is willing to test drone for tests, and organize an appointment	3 <sup>rd</sup> Nov	The Drone, Timer, Farm		
	Fly the drone and spray water for safety				
<b>Step 15: Receive feedback</b>	Collect professional feedback from technology specialists	4 <sup>th</sup> Nov	Yousef Amoura		
<b>Step 16: Finalize Reflecting Process Journals</b>		6 <sup>th</sup> Nov	My Supervisor		
<b>Step 17: Exhibition</b>	Prepare and practice presentation	4 <sup>th</sup> Dec	Product and display		
	Present at the event				

The main **ATL skills** applied were self-management skills, through organization skills and affective skills. Firstly, I organized my time and split the work into chunks, thus planning my short and long-term assignments to prepare to meet deadlines. I identified potential challenges as a strategy to take action and achieve academic goals. I also showed resilience, when dealing with change.

## Meeting with your Supervisor

### PART 1: Investigating

#### AREAS OF INVESTIGATION- discussion points with supervisor:

- Personal interest of the goal
- Global Context
- Prior learning and subject specific knowledge
- Research a wide variety of sources and evaluation of sources
- Approaches to Learning skills being implemented

#### GUIDING QUESTIONS FOR PROCESS JOURNAL ENTRIES AND MEETINGS WITH SUPERVISOR:

- Why have I chosen this topic and global context?
- What do I already know about my topic that will be useful to me?
- What results do I expect?
- Am I developing insight in my field of study?
- Are my sources relevant and trustworthy? What makes them so?
- Am I demonstrating good organizational skills through time/self-management?
- Am I demonstrating good information literacy, thinking and reflection skills?
- Why is the academic honesty form important to keep up to date?

#### **IMPORTANT**

**Record the first meeting on the Academic Honesty Form with the support of your supervisor**

### PART 2: Planning

#### AREAS OF PLANNING- discussion points with supervisor:

- Development of criteria for evaluating the outcome
- Your plan and project timeline

#### GUIDING QUESTIONS FOR PROCESS JOURNAL ENTRIES AND MEETINGS WITH SUPERVISOR:

- Am I applying my research and prior learning to my project in a meaningful way?
- Is my chosen global context driving my project?
- Have I set appropriate deadlines for the duration of my process?
- Have I created success criteria for a high-quality product?

#### Specific questions related to your plan, such as

- Have I started organizing events (how, when, where)?
- What are the results of the experiments that were carried out?
- Results of questionnaires? What does the data tell you?
- What information did you gain from interviewing experts in your field?
- What are my next steps?

#### **IMPORTANT**

- 1. Complete criteria for success, an action plan and share these with your Supervisor**
- 2. Take pictures showing the creation of the product**
- 3. Make at least 10 entries in your Process Journal by this time**

### **PART 3: Taking Action**

#### **AREAS OF TAKING ACTION- discussion points with supervisor:**

- Complete the final product
- Prepare for the Exhibition of your product
- Plan for your presentation with talking points and displays

#### **GUIDING QUESTIONS FOR PROCESS JOURNAL ENTRIES AND MEETINGS WITH SUPERVISOR:**

- Did I create an outcome that responds effectively to my goal, global context and criteria?
- What changes/alterations have to be made in order to achieve my goal?
- What creative challenges did I face when completing my outcome?
- How have I used my communication and social skills to contribute to the success of my outcome?
- How can I best present my product in the exhibition?

#### **Specific questions related to your outcome, such as...**

- Who did I communicate with/receive expertise from? Was I effective in my meetings with them?
- What specific problems did I face/overcome/avoid and how?

#### **IMPORTANT**

1. Complete the creation of your final product
2. Take regular pictures of the product creation steps and add to your process journal
3. Prepare Personal Project Exhibition
4. Make supporting entries in the Process Journal

### **PART 4: Reflecting**

#### **AREAS OF REFLECTION AND DISCUSSION POINTS WITH SUPERVISOR:**

- Evaluation of product/outcome against the criteria (design specifications)
- Extended knowledge and understanding of topic
- Extended knowledge and understanding of global context
- Development of ATL skills and as an IB Learner

#### **GUIDING QUESTIONS FOR PROCESS JOURNAL ENTRIES AND MEETINGS WITH SUPERVISOR:**

- What is the evaluation of my product/outcome against the criteria?
- How has completing this project extended my knowledge and understanding of my topic?
- How has completing this project extended my knowledge and understanding of my GC?
- What IB LP attributes have I developed, strengthened and realized I need to improve upon?
- What ATL skill do I need to focus on or have shown improvement in?

#### **Specific questions related to your Draft Report:**

- Does the format follow the outline provided?
- Is there evidence and examples to support points?
- What changes/edits/improvements can be done to your report?
- Have I credited all the sources used?
- Have I supported my statements with Process Journal entries?



## Structure of the Report

**Do not include your name, personal code, session number or name of the school on any page.**

**Do not include links in your report as these cannot be considered by examiners.**

**Instead submit screenshots of material/evidence.**

The report must include:

- Title page (cover sheet)
- Table of Contents
- Body of your report
- Works Cited - MLA
- Process Journal extracts as appendices
- Photographs of different stages of your process in the appendices

Length must be 1500 to 3500 words, not including the title page, appendices, works cited and table of contents.

**The Body of the Report** is structured around the assessment criteria. It must include the following headings and may include the following subheadings:

### **Criterion A: Investigating**

- Goal and Global Context
- Prior Learning and Subject Specific Knowledge
- Research Skills

### **Criterion B: Planning**

- Success Criteria
- Plan and Process
- Self-Management Skills

### **Criterion C: Taking Action**

- Evidence of Final Product
- Description of the Final Product in relation to my goal, global context and criteria
- Thinking Skills
- Communication and Social Skills

### **Criterion D: Reflecting**

- Evaluation of the quality of the Product
- Extension of my knowledge and understanding of the Topic
- Extension of my knowledge and understanding of the Global Context
- Development as an IB Learner

## Writing the Report

### Criterion A: Investigating

Level	Strand descriptor	Task-specific clarification
1-2	<p>i. State a goal and global context for the project, based on personal interests, but this may be limited in depth or accessibility</p> <p>ii. Identify prior learning and subject-specific knowledge, but this may be limited in occurrence or relevance</p> <p>iii. Demonstrate limited research skills</p>	<p>i. States a goal that is unrealistic or shallow which does not have a clear connection to personal interests or stated GC.</p> <p>ii. States some prior learning relevant to the project.</p> <p>iii. • Few or inappropriate sources have been researched and recorded. • Little if any evaluation of sources' reliability or relevance. • Bibliography is inappropriate, inconsistent and/or not used in the project report. • Little evidence of other appropriate research skills.</p>
3-4	<p>i. Outline a basic and appropriate goal and global context for the project, based on personal interests</p> <p>ii. Identify basic prior learning and subject-specific knowledge relevant to some areas of the project</p> <p>iii. Demonstrate adequate research skills</p>	<p>i. Outlines a simple or easily-achievable goal that identifies a relevant global context.</p> <p>ii. Outlines prior learning relevant to some aspect of the project</p> <p>iii. • A range of sources has been researched and recorded. • Specific sources selected for the project are evaluated for reliability or relevance. • Bibliography is consistent and used in the project report. • Some evidence of other appropriate research skills.</p>
5-6	<p>i. Define a clear and challenging goal and global context for the project, based on personal interests</p> <p>ii. Identify prior learning and subject-specific knowledge generally relevant to the project</p> <p>iii. Demonstrate substantial research skills</p>	<p>i. Based on personal interest, develops a clear goal that: • explains what make the goal personally challenging • details the goal's relationship to a relevant global context.</p> <p>ii. Describes with appropriate detail relevant prior learning</p> <p>iii. • An appropriate range of sources and variety of source types have been researched. • Specific sources selected for the project are evaluated effectively for reliability and relevance. • The bibliography is appropriate, consistent, and used effectively in the project report. • Consistent evidence of appropriate research skills.</p>
7-8	<p>i. Define a clear and highly challenging goal and global context for the project, based on personal interest</p> <p>ii. Identify prior learning and subject-specific knowledge that is consistently highly relevant to the project</p> <p>iii. Demonstrate excellent research skills</p>	<p>i. Based on personal interest, develops a clear goal that: • justifies the goal as highly challenging • meaningfully relates to a global context.</p> <p>ii. Analyses relevance and contribution of prior learning to project</p> <p>iii. • An extensive range of sources and variety of source types have been researched. • Sources are consistently and effectively evaluated for their reliability and relevance. • Bibliography is appropriate, consistent and used with sophistication in the project. • Extensive evidence of a broad range of research skills.</p>

<b>RESEARCH - Criterion A: Investigating Strand iii: demonstrate research skills</b>	
VI Information literacy	How could I have demonstrated this in my Personal Project? Comment on any of the following in your report's Investigating Section, not all will be relevant, be selective.
How can students demonstrate information literacy?	What is Information literacy? Finding, interpreting, judging and creating information
	Collect, record and verify data
	Access information to be informed and inform others
	Make connections between various sources of information
	Understand the benefits and limitations of personal sensory learning preferences when accessing, processing and recalling information
	Use memory techniques to develop long term memory
	Present information in a variety of formats and platforms
	Collect and analyse data to identify solutions and/or make informed decisions
	Process data and report results
	Evaluate and select information sources and digital tools based on their appropriateness to specific tasks
	Understand and use technology systems
	Use critical literacy skills to analyze and interpret media communications
<b>VII Media literacy</b>	<b>Interacting with media to use and create ideas and information</b>
How can students demonstrate media literacy?	Locate, organize, analyse, evaluate, synthesize and ethically use information from a variety of sources and media [including digital social media and online networks]
	Demonstrate awareness of media interpretations of events and ideas [including digital social media]
	Make informed choices about personal viewing experiences
	Understand the impact of media representations and modes of presentation
	Seek a range of perspectives from multiple and varied sources
	Communicate information and ideas effectively to multiple audiences using a variety of media and formats
	Compare, contrast and draw connections among (multi)media resources

## Criterion B: Planning

Level	Strand descriptor	Task-specific clarification
1-2	<p>i. Develop limited criteria for the product/outcome</p> <p>ii. Present a limited or partial plan and record of the development process of the project</p> <p>iii. Demonstrate limited self-management skills</p>	<p>Criteria that:</p> <ul style="list-style-type: none"> <li>• are basic and/or have some connection to the product/outcome</li> </ul> <p>A brief plan that is not specific to the stated goal with a minimal outline of the development process.</p> <p>A brief account of:</p> <ul style="list-style-type: none"> <li>• basic or inconsistent time and/or task management</li> <li>• affective skills practised through the project.</li> </ul>
3-4	<p>i. Develop adequate criteria for the product/outcome</p> <p>ii. Present an adequate plan and record of the development process of the project</p> <p>iii. Demonstrate adequate self-management skills</p>	<p>Criteria that:</p> <ul style="list-style-type: none"> <li>• start to consider the qualitative elements of the product/outcome</li> <li>• outline how their success might be observed.</li> </ul> <p>A plan that includes:</p> <ul style="list-style-type: none"> <li>• long-term planning that is not broken down to specific steps</li> <li>• vague connections to the student's project</li> <li>• very general dates and deadlines.</li> </ul> <p>The record of the development process includes:</p> <ul style="list-style-type: none"> <li>• a general and/or fragmented explanation of the process that does not clearly correspond to the plan.</li> </ul> <p>A description of:</p> <ul style="list-style-type: none"> <li>• appropriate time and task management which show some independence</li> <li>• affective skills practised through the project</li> <li>• use of another self-management skill.</li> </ul>
5-6	<p>i. Develop substantial and appropriate criteria for the product/outcome</p> <p>ii. Present a substantial plan and record of the development process of the project</p> <p>iii. Demonstrate substantial self-management skills</p>	<p>Criteria that are:</p> <ul style="list-style-type: none"> <li>• realistic and relevant to the product/outcome</li> <li>• informed by research</li> <li>• qualitative and/or quantitative, as appropriate.</li> </ul> <p>A plan that includes:</p> <ul style="list-style-type: none"> <li>• short and long-term planning that has not been broken down into specific steps</li> <li>• clear connections to the student's project</li> <li>• specific dates and deadlines.</li> </ul> <p>The record of the development process includes:</p> <ul style="list-style-type: none"> <li>• explanation of process from start to finish that corresponds to the plan</li> <li>• changes that are stated but not justified.</li> </ul> <p>An explanation of:</p> <ul style="list-style-type: none"> <li>• effective and often independent time and task management</li> <li>• affective skills practised through the project</li> <li>• effective use of other self-management skills.</li> </ul>

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7-8	<p>i. Develop rigorous criteria for the product/outcome</p> <p>ii. Present a detailed and accurate plan and record of the development process of the project</p> <p>iii. Demonstrate excellent self-management skills</p>	<p>Criteria that:</p> <ul style="list-style-type: none"> <li>• clearly define the specific characteristics of a high-quality product/outcome</li> <li>• are explicitly informed by highly relevant research</li> <li>• are justified, specific and multidimensional.</li> </ul> <p>A plan that includes:</p> <ul style="list-style-type: none"> <li>• short- and long-term planning broken down into detailed, logical steps</li> <li>• a strong focus to the student's project</li> <li>• specific dates, deadlines and clear records of adjustment to the project's timeline.</li> </ul> <p>The record of the development process includes:</p> <ul style="list-style-type: none"> <li>• a comprehensive account of the process from start to finish that corresponds closely to the plan</li> <li>• changes that are clearly described and justified.</li> </ul> <p>A justification of:</p> <ul style="list-style-type: none"> <li>• strengths and limitations for effective and independent time and task management</li> <li>• affective skills practised through the project</li> <li>• highly effective use of other self-management skills</li> </ul>
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<b>SELF-MANAGEMENT - Criterion B: Planning Strand iii: demonstrate self-management skills</b>	
III Organization: managing time & resources, using PJ to plan, develop, record progress.	How could I have demonstrated this in my Project? Comment on any of the following in your report's Planning Section, not all will be relevant, be selective.
How can students demonstrate organisation skills?	What is organization? Managing time and tasks effectively
	Plan short and long term assignments; meet deadlines
	Create plans to prepare for summative assessments
	Keep and use a weekly planner for assignments
	Set goals that are challenging and realistic
	Plan strategies and take action to achieve personal and academic goals
	Bring necessary equipment and supplies
	Keep an organized and logical system of information files/notebooks
	Use appropriate strategies for organizing complex information
	Understand and use sensory learning preferences (learning styles)

		Select and use technology effectively and productively
IV Affective skills: managing state of mind		How could I have demonstrated this? Comment on any of the following in your report's Planning Section, not all will be relevant, be selective.
How can students manage their own state of mind?	Mindfulness	Practice focus and concentration
		Practice strategies to develop mental quiet
		Practice strategies to overcome distractions
	Perseverance	Demonstrate persistence and perseverance
		Practice delaying gratification
	Emotional management	Practice strategies to overcome impulsiveness and anger
		Practice strategies to prevent and eliminate bullying
		Practice strategies to reduce anxiety
		Practice being aware of body-mind connections
	Self-motivation	Practice analyzing and attributing causes for failure
		Practice managing self-talk
		Practice positive thinking
	Resilience	Practice 'bouncing back' after adversity, mistakes and failures
		Practice 'failing well'
		Practice dealing with disappointment and unmet expectations

### Criterion C: Taking Action

Level	Strand descriptor	Task-specific clarification
1-2	<p>i. Create a limited product/outcome in response to the goal, global context and criteria</p> <p>ii. Demonstrate limited thinking skills</p> <p>iii. Demonstrate limited communication and social skills</p>	<ul style="list-style-type: none"> <li>• A poorly rendered/largely unachieved product/outcome</li> <li>• An outline of how the student achieved the project’s goal, connected it with the global context, creating a product/outcome that has little if any reference to the criteria for its success</li> </ul> <p>Outline of:</p> <ul style="list-style-type: none"> <li>• critical- and/or creative-thinking skills relevant to the project.</li> </ul> <p>Outline of:</p> <ul style="list-style-type: none"> <li>• limited or irrelevant interaction with people involved in the project</li> <li>• little collaboration with those relevant to the project (if appropriate to the project).</li> </ul> <p>Report lacks clarity, coherence and/or does not follow required structure.</p>
3-4	<p>i. Create a basic product/outcome in response to the goal, global context and criteria</p> <p>ii. Demonstrate adequate thinking skills</p> <p>iii. Demonstrate adequate communication and social skills</p>	<ul style="list-style-type: none"> <li>• A simple product/outcome</li> <li>• A description of how the student achieved the project’s goal and connected it with the global context, creating a product/outcome with some reference to the criteria for its success</li> </ul> <p>Description of:</p> <ul style="list-style-type: none"> <li>• critical- and creative-thinking skills appropriate to the project</li> <li>• transfer of some learning from the research that helps to achieve the project’s goal.</li> </ul> <p>Description of:</p> <ul style="list-style-type: none"> <li>• interaction with some people relevant to the project</li> <li>• working effectively with others (if appropriate to the project).</li> </ul> <p>Report occasionally clear, coherent and partially follows required structure.</p>
5-6	<p>i. Create a substantial product/outcome in response to the goal, global context and criteria</p> <p>ii. Demonstrate substantial thinking skills</p> <p>iii. Demonstrate substantial communication and social skills</p>	<ul style="list-style-type: none"> <li>• A good-quality product/successful outcome</li> <li>• An explanation of how the student achieved the project’s goal and connected it with a global context, creating a product/outcome with clear reference to the criteria for its success</li> </ul> <p>Explanation of:</p> <ul style="list-style-type: none"> <li>• critical and creative-thinking skills appropriate to the project</li> <li>• transfer of learning from the research to generate new ideas or solve problems that help to achieve the project’s goal.</li> </ul> <p>Explanation of:</p> <ul style="list-style-type: none"> <li>• effective interaction with those relevant to the project using appropriate modes of communication</li> <li>• working effectively with others (if appropriate to the project).</li> </ul> <p>A report that is mostly clear and coherent and follows required structure.</p>
7-8	<p>i. Create an excellent product/outcome in response to the goal, global context and criteria</p>	<ul style="list-style-type: none"> <li>• A high-quality product/highly successful outcome</li> <li>• An analysis and evaluation of how the student achieved the project’s goal and connected it with a global context, creating a product/outcome that comprehensively meets the criteria for its success</li> </ul>

	ii. Demonstrate excellent thinking skills	Analysis and evaluation of: <ul style="list-style-type: none"> <li>• critical and creative-thinking skills appropriate to the project</li> <li>• transfer of learning from the research to generate new ideas or solve problems that help to achieve the project’s goal.</li> </ul>
	iii. Demonstrate excellent communication and social skills	Analysis and evaluation of: <ul style="list-style-type: none"> <li>• valuable ongoing essential interaction with those relevant to the project using a variety of appropriate modes of communication</li> <li>• working effectively with others (if appropriate to the project).</li> </ul> A report that is consistently clear, coherent and effectively (or creatively) follows the required structure.

**THINKING - Criterion C: Taking Action ii: demonstrate thinking skills**

<b>VIII Critical thinking</b>	<b>How could I have demonstrated this in my Project? Comment on any of the following in your report’s Taking Action, not all will be relevant, be selective.</b>
How can students think critically?	<p>What are thinking skills? Analyzing and evaluating issues and ideas</p> <p>Practice observing carefully in order to recognize problems</p> <p>Gather and organize relevant information to formulate an argument</p> <p>Recognize unstated assumptions and bias</p> <p>Interpret data</p> <p>Evaluate evidence and arguments</p> <p>Recognize and evaluate propositions</p> <p>Draw reasonable conclusions and generalizations</p> <p>Test generalizations and conclusions</p> <p>Revise understanding based on new information and evidence</p> <p>Evaluate and manage risk</p> <p>Formulate factual, topical, conceptual and debatable questions</p> <p>Consider ideas from multiple perspectives</p> <p>Develop contrary or opposing arguments</p> <p>Analyse complex concepts into their constituent parts and synthesize them to create new understanding</p> <p>Propose and evaluate a variety of solutions</p> <p>Identify obstacles and challenges</p> <p>Use models and simulations to explore complex systems and issues</p>



	Identify trends and forecast possibilities
	Troubleshoot systems and applications
<b>IX Creative thinking</b>	<b>The skills of invention – developing things and ideas that never existed before</b>
How can students be creative?	Use brainstorming and mind mapping to generate new ideas and inquiries
	Consider multiple alternatives, including those that might be unlikely or impossible
	Create novel solutions to complex problems
	Use lateral thinking to make unexpected connections
	Design improvements to existing machines, media and technologies
	Design new machines, media and technologies
	Make guesses and generate testable hypotheses
	Apply existing knowledge to generate new ideas, products or processes
	Create original works and ideas
	Practice flexible thinking – arguing both sides of an argument
	Use visible thinking strategies and techniques
	Propose metaphors and analogies

<b>COMMUNICATION - Criterion C - Taking Action Strand iii: demonstrate communication and social skills</b>	
<b>I: Communication Skills: tools that are most appropriate for the audience and help communicate the message in a structured manner.</b>	<b>How could I have demonstrated this in my Personal Project? Comment on any of the following in your report's Taking Action Section, not all will be relevant, be selective.</b>
Inquiry focus: How can students communicate through interaction?	<b>What is Communication? Exchanging thoughts, messages and information effectively through interaction</b>
	Give and receive meaningful feedback
	Use intercultural understanding to interpret communication
	Use a variety of speaking techniques to communicate with a variety of audiences

	Use appropriate forms of writing for different purposes and audiences
	Use a variety of media to communicate with a range of audiences
	Interpret and use effectively modes of non-verbal communication
	Negotiate ideas and knowledge with peers and teachers
	Participate in, and contribute to, digital social media networks
	Collaborate with peers / experts using variety of digital media
	Share ideas with multiple audiences using a variety of digital environments and media
How can students demonstrate communication through language?	<b>Reading, writing and using language to gather and communicate information</b>
	Read critically and for comprehension
	Read a variety of sources for information and for pleasure
	Make inferences and draw conclusions
	Use and interpret a range of discipline-specific terms and symbols
	Write and for different purposes
	Understand and use mathematical notation
	Paraphrase accurately and concisely
	Preview and skim texts to build understanding
	Make effective summary notes for studying
	Use a variety of organizers for academic writing tasks
	Find information for disciplinary and interdisciplinary inquiry using a variety of media
	Organize and depict information logically

	Structure information in summaries, essays and reports
	Understand and implement intellectual property
	Create references and citations, use footnotes/endnotes and construct a bibliography according to recognized conventions
	Identify primary and secondary sources



<b>SOCIAL - Criterion C - Taking Action Strand iii: demonstrate communication and social skills</b>	
<b>II Collaboration skills: People relevant to the project: including school staff (project coordinator, supervisor, librarian) and specialists in the community.</b>	<b>How could I have demonstrated this in my Personal Project? Comment on any of the following in your report's Taking Action Section, not all will be relevant, be selective.</b>
How can students collaborate?	Working effectively with others
	Use social media networks appropriately to build and develop relationships
	Practice empathy
	Delegate and share responsibility for decision-making
	Help others to succeed
	Take responsibility for one's own actions
	Manage and resolve conflict and work collaboratively in teams
	Build consensus
	Make fair and equitable decisions
	Listen actively to other perspectives and ideas
	Negotiate effectively
	Encourage others to contribute
	Exercise leadership and take on a variety of roles within groups
	Give and receive meaningful feedback
Advocate for your own rights and needs	

## Criterion D: Reflecting

Level	Strand descriptor	Task-specific clarification
1-2	<p>i. Present a limited evaluation of the quality of the product/success of the outcome against their criteria</p> <p>ii. Present limited reflection on how completing the project has extended their knowledge and understanding of the topic and the global context</p> <p>iii. Presents limited reflection on their development as an IB learner through the project</p>	<p>The evaluation outlines the quality of the product/success of the outcome against some of the stated criteria.</p> <p>The reflection states at least one way the student has extended his or her knowledge and understanding of the topic and/or the global context, with no examples.</p> <p>The reflection states at least one way the student has developed as an IB learner, without using examples.</p>
3-4	<p>i. Present a basic evaluation of the quality of the product/success of the outcome against their criteria</p> <p>ii. Present adequate reflection on how completing the project has extended their knowledge and understanding of the topic and the global context</p> <p>iii. Presents adequate reflection on their development as an IB learner through the project</p>	<p>The evaluation describes the quality of the product/success of the outcome against some of the stated criteria.</p> <p>The reflection outlines ways in which the student has extended his or her knowledge and understanding of the topic and the global context, using some examples.</p> <p>The reflection outlines ways the student has developed as an IB learner using some examples.</p>
5-6	<p>i. Present a substantial evaluation of the quality of the product/success of the outcome against their criteria</p> <p>ii. Present substantial reflection on how completing the project has extended their knowledge and understanding of the topic and the global context</p> <p>iii. Presents substantial reflection on their development as an IB learner through the project</p>	<p>The evaluation explains the quality of the product/success of the outcome against most of the stated criteria.</p> <p>The reflection explains how the student has extended his or her knowledge and understanding of the topic and the global context, using specific and well-chosen examples.</p> <p>The reflection explains how the student has developed as an IB learner using specific, well-chosen examples.</p>
7-8	<p>i. Present an excellent evaluation of the quality of the product/success of the outcome against their criteria</p> <p>ii. Present excellent reflection on how completing the project has extended their knowledge and understanding of the topic and the global context</p> <p>iii. Presents excellent reflection on their development as an IB learner through the project</p>	<p>The evaluation analyses the quality of the product/success of the outcome against all the stated criteria.</p> <p>The reflection evaluates how the student has extended his or her knowledge and understanding of the topic and the global context, using meaningful examples, detailed descriptions and insightful explanations.</p> <p>The reflection evaluates the student's development as an IB learner using appropriate examples, detailed descriptions and insightful explanations.</p>

## Command Terms

Term	Definition
Create	To evolve from one's own thought or imagination, as a work or an invention.
Define	Give the precise meaning of a word, phrase, concept or physical quantity.
Demonstrate	Make clear by reasoning or evidence, illustrating with examples or practical application.
Develop	To improve incrementally, elaborate or expand in detail; evolve to a more advanced or effective state.
Formulate	Express precisely and systematically the relevant concept(s) or argument(s).
Identify	Provide an answer from a number of possibilities; recognize and state briefly a distinguishing fact or feature
Justify	Give valid reasons or evidence to support an answer or conclusion.
Outline	Give a brief account or summary.
Present	Offer for display, observation, examination or consideration.
State	Give a specific name, value or other brief answer without explanation or calculation.



# MYP projects academic honesty form

## MYP Community project/MYP Personal project

(Delete as appropriate)

Student name										
Student number										
School name										
School number							Supervisor name			
Supervisor name										
<p><b>Student:</b> This document records your progress and the nature of your discussions with your supervisor. You should aim to see your supervisor at least three times: at the start of the process to discuss your initial ideas, then once you have completed a significant amount of your project, and finally once your completed report/presentation has been submitted.</p> <p><b>Supervisor:</b> You are asked to have at least three supervision sessions with students, one at the start of the process, an interim meeting and then the final meeting. Other sessions are permitted but do not need to be recorded on this sheet. After each session, students should make a summary of what was discussed and you should sign and date these comments.</p>										
	Date	Main points discussed					Signature/Initials			
Meeting 1							Student: <div style="border: 1px solid #ccc; height: 20px; width: 100%;"></div> Supervisor: <div style="border: 1px solid #ccc; height: 20px; width: 100%;"></div>			
Meeting 2							Student: <div style="border: 1px solid #ccc; height: 20px; width: 100%;"></div> Supervisor: <div style="border: 1px solid #ccc; height: 20px; width: 100%;"></div>			

Meeting 3			Student:
			Supervisor:
<b>Supervisor comment</b>			
<b>Student declaration</b>			
<p>I confirm that this work is my own and this is the final version. I have acknowledged, in the body of my work, each use of the words, work or ideas of another person, whether written, oral or visual (hard copy and/or electronic materials).</p>			
<b>Supervisor declaration</b>			
<p>I confirm that, to the best of my knowledge, the material submitted is the authentic work of the student.</p>			
<b>Student's signature</b>			Date
<b>Supervisor's signature</b>			Date



## Personal Project Checklist

Title Page	<ul style="list-style-type: none"> <li>○ Title of project</li> <li>○ Date submitted</li> <li>○ Candidate number</li> <li>○ Word Count (max 3500 words...not including table of contents, works cited and appendix)</li> </ul>
Table of Contents	<ul style="list-style-type: none"> <li>○ All pages in the report are numbered.</li> <li>○ The page numbers in my table of contents match the content of the corresponding page.</li> </ul>
Investigating	<p><b>Command terms: Define- Identify- Demonstrate</b></p> <ul style="list-style-type: none"> <li>○ I identified and explained my topic and why it is of personal interest.</li> <li>○ I identified the prior learning and the subject specific knowledge/skills and explained how it helped me achieve my goal.</li> <li>○ I outlined a clear, achievable, challenging goal and explained the challenge.</li> <li>○ I demonstrated how the goal guided my planning, action and reflection</li> <li>○ I justified why I chose my Global Context and defined the exploration.</li> <li>○ I utilized a range of varied, relevant sources which helped me achieve my goal and develop my product or outcome.</li> <li>○ I evaluated each of my sources for relevance and reliability.</li> <li>○ I created a well-organised MLA works cited page.</li> <li>○ I interpreted the information from my sources and identified how I applied that information during my project development.</li> <li>○ My report and process journal extracts helped me demonstrate research skills</li> </ul>
Planning	<p><b>Command terms: Develop- Plan- Demonstrate</b></p> <ul style="list-style-type: none"> <li>○ The goal and research guide my planning</li> <li>○ I demonstrated how my success criteria are guided by my research</li> <li>○ My success criteria are clear, specific, measurable and related to my goal.</li> <li>○ My success criteria will help me achieve a high-quality product</li> <li>○ I demonstrated understanding that the criteria I created will guide my reflection later <i>Click on page number to return to</i></li> <li>○ The criteria evaluated the project <i>Table of Contents</i> context</li> <li>○ I described a detailed and accurate plan and record of the development process of my project from start to finish.</li> <li>○ I developed short and long term plans with detailed and logical steps in the process journal</li> <li>○ I provided explanations of adjustments to timeline with justification</li> <li>○ I explained using clear examples the use of self-management skills (organisation-affective- reflection).</li> </ul>
Taking action	<p><b>Command terms: Create- Demonstrate</b></p> <ul style="list-style-type: none"> <li>○ The goal and research guide my action</li> <li>○ I demonstrated how I created a high-quality product and explained how it serves the goal and the Global Context- it is not an evaluation, it is just an explanation of the journey.</li> <li>○ I explained how I utilized critical thinking in order to identify problems, improved my design based on creative solutions.</li> </ul>

	<ul style="list-style-type: none"> <li>○ I showed how I used creative thinking skills to come up with new solutions to problems, original ideas, experimenting based on research.</li> <li>○ I analysed and demonstrated the creation process.</li> <li>○ I demonstrated how my understanding of the Global Context exploration guided my action.</li> <li>○ I demonstrated how research guided my action.</li> <li>○ I created new ideas based on data collected from research.</li> <li>○ I referenced the success criteria when I explained how I created the product.</li> <li>○ I asked the target audience to assess my product as part of my action.</li> <li>○ I analysed ideas and sources (especially in process journal).</li> <li>○ I was clear, logical and straight forward with my writing.</li> <li>○ I used proper terminology to match my topic.</li> <li>○ I showed that I had regular self-initiated meetings with my supervisor.</li> <li>○ I mentioned how I used feedback to take thoughtful action (basically a description of the inquiry-action-reflection cycle).</li> <li>○ I described how I used a variety of media and interacted with several people.</li> <li>○ I showed how I was able to respect different opinions, collaborate, and empathise.</li> </ul>
Reflecting	<p><b>Command terms: Evaluate- Reflect</b></p> <ul style="list-style-type: none"> <li>○ The goal, success criteria and research guide my reflection</li> <li>○ I evaluated the quality of my outcome/product against each strand in my criteria (specifications).</li> <li>○ I included many detailed examples of achievements and possible improvements.</li> <li>○ I evaluated whether my project achieves its overall goal and responds to the global context.</li> <li>○ I explained how the project changed my perception regarding the topic.</li> <li>○ I explained how the project extended my understanding of the global context.</li> <li>○ I gave multiple examples of growth throughout the project.</li> <li>○ If I would do this project again, I described how I would do it differently.</li> <li>○ I reflected on how the project influenced me as an IB learner (IB learner profile).</li> <li>○ I included new questions that have arisen from my research that I would like to explore further.</li> <li>○ I used specific examples to reflect and was insightful.</li> </ul>
Works Cited	<ul style="list-style-type: none"> <li>○ I used many sources and a variety of sources.</li> <li>○ I included a complete and accurate Works Cited page using MLA formatting.</li> <li>○ I referenced all the images and data that I have obtained from my sources.</li> <li>○ I used in-text referencing for information that I have obtained from my sources.</li> </ul>
Appendices	<ul style="list-style-type: none"> <li>○ My attachments provide evidence of my process and product. (5 clear images)</li> <li>○ I titled and numbered each Appendix. (ex. Appendix 1: Photographs of Building the Aquaponics System).</li> <li>○ My attachments (graphs, drawings, photographs, etc.) are labeled and referred to within the report.</li> <li>○ I included a maximum of 10 extracts from my Process Journal that clearly demonstrate how you have addressed each of the project objectives.</li> <li>○ I made clear references to the appendices in the body of my report.</li> </ul>
Academic Honesty Form	<ul style="list-style-type: none"> <li>○ I met with my supervisor to review this form and we both have signed it.</li> <li>○ I submitted the form.</li> </ul>