RAMALLAH FRIENDS SCHOOL
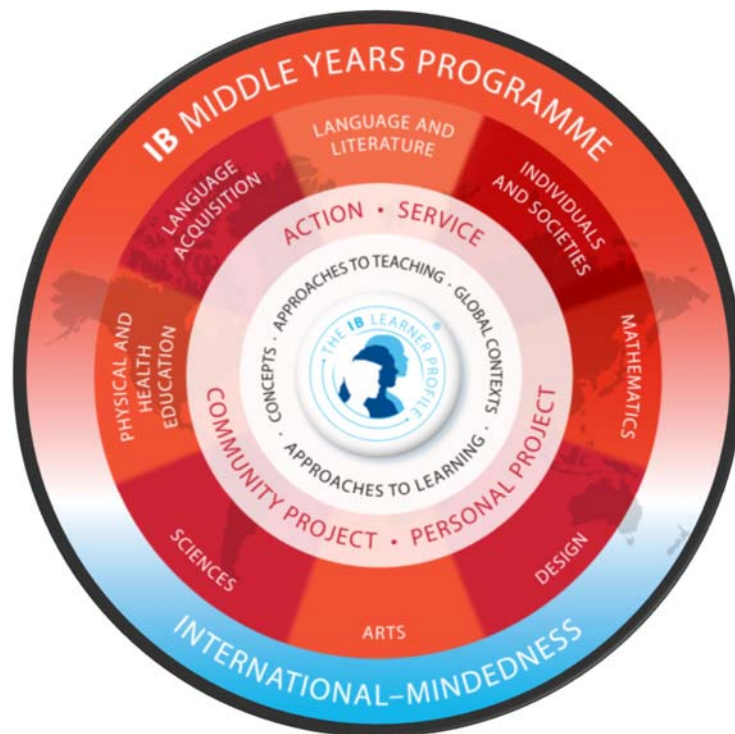

IB-MYP Personal Project
Handbook for Students
2021-2022

Contents

Nature of the personal project:

The personal project provides an opportunity for students to undertake an independent and age-appropriate exploration into an area of personal interest. Through the process of **inquiry**, **action** and **reflection**, students are encouraged to demonstrate and strengthen their **approaches to learning** (ATL) skills. Each student develops a personal project **independently**.

Defining the project:

The personal project is truly personal because each student sets their own goal based on something that they find interesting. Students may draw inspiration from their prior experience in the MYP, such as:

✓ a **global context** that they find particularly compelling

✓ a **service as action** experience that they would like to build on

✓ a **unit of inquiry** that they would like to explore further.

Similarly, students may draw inspiration from their interests and hobbies outside school. They may also consider developing new ones.

The project consists of two interrelated parts:

- a **learning goal** (what the student wants to learn)

- a **product** (what the student wants to create).

*The project can change, if necessary, during the process.

The project's starting point may be either the learning goal or the product. One learning goal can lead to different products, just as one product can relate to a variety of learning goals.

Below are **ideas** to help students define their projects.
- What have you always wanted to do?
- What do you do in your free time?
- What would you like to do in your free time?
- What IB learner profile attribute best describes you?
- What IB learner profile attribute would you like to develop?
- Which global context interests you the most?
- Which interdisciplinary or design project interested you the most?
- Which experience of service as action did you find the most satisfying?
- What problem within your community most affects you?
- Which is your favourite academic discipline?
- Which research project would you like to develop?

The role of the student:

The aims of the MYP projects are to encourage and enable students to:

✓ explore an interest that is personally meaningful (intellectual curiosity; family connection; social, cultural or geographical relevance; individual passion; etc)
✓ take ownership of their learning by undertaking a self-directed inquiry
✓ transfer and apply skills in pursuit of a learning goal and the creation of a product
✓ recognize and evidence personal growth and development.

Objectives:
- ➢ Three objectives underpin a valid and reliable evaluation of the project.
- ➢ Each objective corresponds to a section of the report.

They also align with the assessment criteria your project score is based on.

Criterion A: Planning
Maximum: 8
- i.   state a learning goal for the project and explain how a personal interest led to that goal.
- ii. state an intended product and develop appropriate success criteria for the product.
- iii. present a clear, detailed plan for achieving the product and its associated success criteria.

Criterion B: Applying skills
Maximum: 8
- i. explain how the ATL skill(s) was/were applied to help achieve their learning goal.
- ii. explain how the ATL skill(s) was/were applied to help achieve their product.

Criterion C: Reflecting
Maximum: 8
- i. explain the impact of the project on themselves or their learning.
- ii. evaluate the product based on the success criteria.

MYP personal project components
This overview describes the components of a complete personal project that is ready to be submitted to the student's supervisor for assessment or to the IB for moderation.

To include:	Prompts:
MYP personal project coversheet	Complete the cover sheet at the very end of the project.
MYP projects academic honesty form	You will need this form from the beginning of your project since you must complete three sections during meetings with your supervisor.
Evidence of your product	You need to include evidence of the product. You can include (a copy of) the product itself, or extracts of the product, or up to five still images or 30 seconds of video of the product.
Project report	Your report can be in written, or oral. The report is distinct from your process journal and product. In the report, you discuss the process you carried out and what you learned from completing the personal project. Your report should be structured in identifiable sections, following the MYP projects objectives.
Bibliography/sources	You must include a bibliography that follows a recognized convention, as used by your school. You may use in-text citations, footnotes/endnotes or other recognized systems to credit the ideas of others in your work.

Time Frame

To complete the personal project, students must follow the following steps:
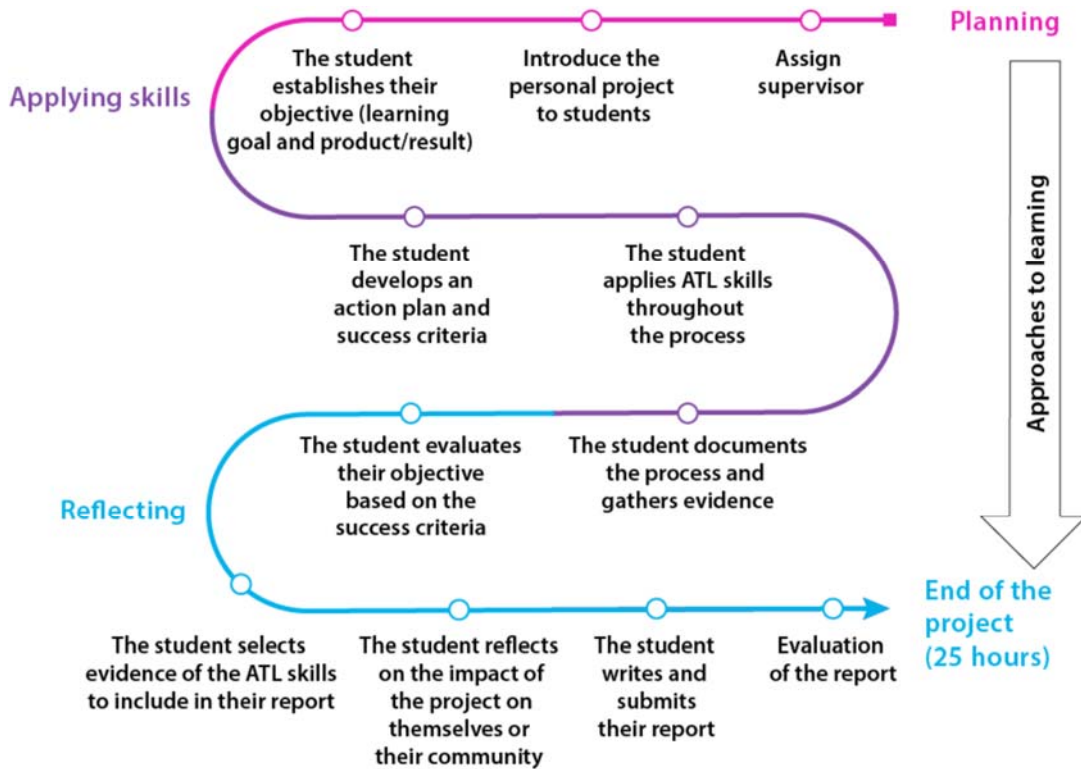
Getting Started:

1. Choose your topic.

Consider the following questions while thinking about what topic to choose:
- ➤ What is something that you have always wanted to learn but have never had the opportunity?
- ➤ What problems in our community would you want to solve?
- ➤ How do you like to express yourself?
- ➤ How and what can you innovate to improve our quality of life or community?

2. Select your supervisor with a general topic in mind.
- ✓ Identify a teacher who you will meet with at least once per month (during the school year) and who will guide you through your project from start to finish.
- ✓ Choose someone you are comfortable working with.

3. Your personal project plan is the start of your process journal.
- ➤ Date every entry.
- ➤ Aim for a minimum of one entry per week. Entries include:
  - ✓ Brainstorming and Thinking Maps.
  - ✓ Notes, bullet lists, charts, short paragraphs, timelines.
  - ✓ Annotated research
    - ▪ Bibliography of resources.
    - ▪ Notes on what has been learned.
  - ✓ Annotated illustrations, pictures, photographs, sketches, diagrams.
  - ✓ Artifacts from inspirational visits to museums, performances, etc...
  - ✓ Self and peer assessment
    - ▪ Explanations of how the research was used in the project to reach your goal
    - ▪ Challenges/difficulties faced
    - ▪ Questions to ask your supervisor and answers received

❖ A scrap book may be an effective process journal when:
- ✓ evidence is arranged in a logical sequence (this could include collage and mind map work)
- ✓ items are annotated
- ✓ items are dated to show chronology (order of events).
- ✓ objects that reveal the nature of the project are included such as samples of textiles, colour swatches
- ✓ a variety of materials are used
- ✓ it allows the student to effectively communicate the process.

Don't forget to reflect on your use and development of the Approaches to Learning throughout your process journal!

4. **Evidence of the Process:**
Students are expected to document the process they followed to complete their project. In this way, they can demonstrate how they developed ATL skills and their academic honesty.

Possible evidence may include:
- visual thinking diagrams (mind maps)
- bulleted lists
- charts
- short paragraphs
- notes
- timelines, action plans
- annotated illustrations, annotated research
- artifacts from inspirational visits to museums, performances, galleries
- pictures, photographs, sketches
- screenshots of a blog or website
- self- and peer-assessment feedback.

Evidence of the process is:	Evidence of the process is not:
✳ gathered throughout the project to document its development.	✳ collected on a daily basis (unless this is useful for the student).
✳ an evolving record of intents, processes, accomplishments.	✳ written up after the process has been completed.
✳ a place for evaluating work completed.	✳ additional work on top of the project; it is part of and supports the project.
✳ reflection on learning.	
✳ devised by the student in a format that suits his or her needs.	✳ a diary with detailed writing about what was done (unless this is useful for the student).
✳ a record of reflections and formative feedback received.	
✳ a means of exploring ideas and solutions.	✳ a single, static document with only one format (unless this is useful for the student).
✳ a collection of useful information, for example, quotations, pictures, ideas, photographs.	
✳ a record of selected, annotated and/or edited research and to maintain a bibliography.	
✳ a record of interactions with sources, for example, teachers, supervisors, external contributors.	
✳ a collection of initial thoughts and developments, brainstorming, possible lines of inquiry and further questions raised.	

5. **Success criteria**

The **success criteria**, developed by the student, measure the degree of excellence to which the **product** aspires or the terms under which the product can be judged to have been successful.

- The success criteria must be Specific, Measurable, Achievable, Relevant and Time-bound (SMART).
- The success criteria must evaluate the product.
- The success criteria must evaluate the impact on the student or the community.

Ideas of specific product features

Product Form:	Product Content:
✓ technique or material used	✓ strand
✓ number of pages	✓ target audience
✓ length	✓ organization
✓ resource people	✓ quality of the language
✓ visual aspects	✓ result achieved.
✓ colours	
✓ size	
✓ text type.	

6. **Action Plan:**

Working with the timeline, students plan the time they need to spend on their personal projects by drawing up a timetable that gives them an overall view of everything they have to achieve. They can then add daily or weekly details showing everything they have to do. The action plan must show how students will create the product and fulfill the success criteria.

For this step of the project, students may draw inspiration from similar action plans created for the individuals and societies subject.

The project is split into three main steps that correspond to the objectives.

Planning

Applying Skills:
- ➢ Achieving the learning goal
- ➢ Completing the product

Reflecting

Students must regularly revisit this plan to document and explain any changes to the expected deadlines.

7. **Applying the ATL skills**

To complete the project, students must work through different steps to explore the learning goal and achieve the product.

Below are some **ideas** of how to do this.
- Planning resources (financial, human and material) and constraints
- Producing drafts, sketches, prototypes, plans, etc
- Choosing information, techniques and materials based on the research
- Testing techniques and materials
- Compiling a list of purchases
- Predicting other possibilities
- Planning the documents to produce (survey, letter, poster, visual aids, etc)
- Preparing meetings (interviews, surveys, presentations, resource people, etc)
- Practicing a presentation
- Creating
- Regularly assessing their work to see if the product helps achieve the learning goal; this could be a self-assessment or an assessment by another person
- Making necessary improvements
- Presenting the product

Which ATL skills will be useful for your project?
- Review the ATL guide.
- Define the specific skills for each category (communication, collaboration, organization, affective, reflection, information literacy, media literacy, critical thinking, creative thinking, transfer) that you will need.
- Identify how you will gather your evidence.

8. Reflecting

Impact: "both negative and positive planned and unplanned consequences of a completed project, including those that only emerge sometime after the project ends".

Below are **ideas** to help students assess the impact of their projects.

How have I changed?	**What have I learned about the subject?**
	What have I learned about myself?
	What skills have I acquired?
	What skills have I improved?
	What am I most proud of?
	How has my point of view changed?
	How has my project prepared me for the future?

9. Evaluating the product

Below are **ideas** to help students evaluate their products based on their chosen success criteria.
- To what extent did I complete my product based on the success criteria?
- How can I demonstrate that I completed my product based on my success criteria?
- What are my project's strengths?
- What could I have done differently to make my product better reflect my success criteria?

Writing the Project Report

There are two possible formats for the MYP personal project report: **written** and/or **oral**.
Students can combine these formats in a multimedia report. Students may submit their report in written or recorded format, or a combination of the two. The table below shows the maximum length of students' submissions.

1. To ensure that the written part of the report is clearly legible, each page must have a minimum:
    - 12-point font size
    - 2 cm margins.

2. Evidence presented in images must be clearly visible at the size submitted.
3. Where a spoken report is submitted, the only evidence that will be considered for assessment is the **audio** itself, plus any supporting pages of documents.
4. Visual aids (such as PowerPoint slides) may be used to support a spoken presentation, but these will **not** be considered as a constituent part of the submission for assessment purposes.
5. The bibliography is uploaded separately and is **not** included in the page limit.
6. Please do not include a title page; if included it will count towards the page limit.

Document File types: .doc, .docx, .pdf (non- editable), .rtf		Recording File types: .mp3, .m4a, .mp4, .mov (codec H264), .m4v
15 pages	and	no recording
14 pages	and	1 minute
13 pages	and	2 minutes
12 pages	and	3 minutes
11 pages	and	4 minutes
10 pages	and	5 minutes
9 pages	and	6 minutes
8 pages	and	7 minutes
7 pages	and	8 minutes
6 pages	and	9 minutes
5 pages	and	10 minutes

Assessment:

The IB Personal Project Rubric is available in the appendix. You should use the rubric to understand the performance expectations for your work and to self-assess your project before you submit it.

You can earn up to 24 points, 8 points within each of 3 criteria on the IB MYP Personal Project rubric. Once your supervisor has assessed your project using the Personal Project rubrics, your score will be determined based on the following table (will be decided by IB next year):

Personal Project Rubric Score	IB Grade
21-24	7
18-20	6
15-17	5
12-14	4
9-13	3
5-8	2
1-4	1

*To be awarded a certificate of completion in the MYP Programme, you must receive a **score of 4** or better on your Personal Project.*

Assessment Criteria

	1-2	3-4	5-6	7-8
Objective A: Planning	**States a learning goal**.	States a learning goal and **outlines** the connection between personal interest(s) and that goal.	States a learning goal and **describes** the connection between personal interest(s) and that goal.	States a learning goal and **explains** the connection between personal interest(s) and that goal.
	States their intended product.	States their intended product and presents **basic** success criteria for the product.	States their intended product and presents **multiple appropriate** success criteria for the product.	States their intended product and presents multiple appropriate, **detailed** success criteria for the product.
	Presents a plan that is superficial or that is not focused on a product.	Presents a plan for achieving the product and **some** of its associated success criteria.	Presents a **detailed** plan for achieving the product and **most** of its associated success criteria.	Presents a detailed plan for achieving the product and **all** of its associated success criteria.
Objective B: Applying Skills	**States** which ATL skills were applied to help achieve their learning goal.	**Outlines** which ATL skills were applied to help achieve their learning goal, with superficial examples or evidence	**Describes** how the ATL skills were applied to help achieve their learning goal, with reference to examples or evidence	**Explains** how the ATL skills were applied to help achieve their learning goal, supported with detailed examples or evidence.
	States which ATL skills were applied to help achieve their product.	**Outlines** which ATL skills were applied to help achieve their product, with superficial examples or evidence.	**Describes** how the ATL skills were applied to help achieve their product, with reference to examples or evidence.	**Explains** how the ATL skills were applied to help achieve their product, supported with detailed examples or evidence.
Objective C: Reflecting	**States** the impact of the project on themselves or their learning.	**Outlines** the impact of the project on themselves or their learning	**Describes** the impact of the project on themselves or their learning.	**Explains** the impact of the project on themselves or their learning
	States whether the product was achieved.	States whether the product was achieved, **partially supported** with evidence or examples.	**Evaluates** the product based on the success criteria, partially supported with evidence or examples.	**Evaluates** the product based on the success criteria, fully supported with specific evidence or detailed examples.

Personal Project Timeline

Deadline to meet with Supervisor and complete Action	Expectations

September 2021	• Choose the topic.
	• Complete the Personal Project Plan form.
	• Find a supervisor.
	• Brainstorm ideas for the personal project.
	• Decide on the format/s you will use for your process journal and make necessary arrangements (purchasing a scrapbook or setting up a blog to use for your journal entries).
	• In your process journal:
	  ✓ Write a clear learning goal for your Personal Project.
	  ✓ Reflect on what draws you to this topic and why you are interested in it.
	  ✓ Write down which Global Context you are considering and why?
	  ✓ Write down questions you might have for when you meet your supervisor in October.
	• Start initial research.
	• Complete and submit the Commitment Contract form.

October 2021	• Begin planning the budget and expenses for your Project. • **Have first meeting of the year with supervisor & record the meeting on the academic honesty form.** • Finalize your project learning goal with your supervisor by choosing a global context and creating a SMART goal. • Continue your research. Discuss your progress and challenges with your supervisor. • Continue writing in your process journal.

November 2021	• In your process journal:
	  ✓ Create a set of questions you need to find answers to when researching your topic and Global Context.
	  ✓ Brainstorm at least five ideas for people / places/ information sources that you could use for researching your topic and Global Context.
	• Using your research questions, begin researching your topic and Global Context. Take notes in your process journal.
	• Discuss your progress and challenges with your supervisor.
	• Develop your project's success criteria.
	• Develop and begin implementing an action plan for creating/doing your project.

December 2021	• In your process journal:
	  ✓ Reflect on what specific information from your research has taught you about your topic and chosen Global Context.
	  ✓ Reflect on how specific information from your research will help you to achieve your goal.
	  ✓ In your process journal, reflect on the decisions you will need to make to achieve your goal. Explain how specific information from your research will help you to make these decisions.
	  ✓ Write down a detailed step-by-step process or plan for achieving your learning goal.
	• Begin working on your product.
	• Discuss your progress with your supervisor to make sure that the project is meeting your criteria for success.
	• Discuss challenges with your supervisor and work on developing solutions to any obstacles or difficulties.
	• Begin creating the draft of your report by doing the **Planning** section.

January 2022	• **Have a mid-point meeting with your supervisor & record the meeting on the academic honesty form.** • Continue implementing your action plan. Make sure that you are meeting your criteria for success. • Discuss challenges with your supervisor and work on developing solutions to any obstacles or difficulties. • Continue writing in your process journal. • Continue developing the draft of your report. Do the **Applying skills** section. • Send the draft of the first two sections of your report to your supervisor for feedback.
February 2022	• Finalize your project. • Add to your process journal as necessary. • Continue developing the draft of your report. • Do the **Reflecting** section.
March 2022 (Deadline is March 15th)	• Finish developing the draft of your report. • Send your draft to your supervisor for feedback. • Finalize your report (***by March 15th***). • Complete the MYP personal project coversheet. • **Have a final meeting with your supervisor& record the meeting on the academic honesty form.** • Develop a way to display and/or present your project at the exhibition. • Attend the Personal Project Exhibition.

Evaluating Sources

Please use this format to evaluate every source you use as you work on your personal project.

Credibility (Origin)	**Who is the source's author?** **What are the author's credentials?** **Who is the publisher?**
Currency	**What is the date of publication?** **For websites, when was the site last updated?**
Point of view or bias (Purpose or Limitations)	**What is the intended purpose?** **Is it easy to make out the author's opinions?**
Coverage	**Is the work a primary or secondary source?**
Relevance and value	**What have you learned from this source?** **How will it help you achieve your product/outcome?**

MYP Personal Project COVERSHEET

Student Name	
Student number	
School name	Ramallah Friends School
School number	001109
Supervisor name	

Title of the project:

Learning Goal of the project:

Length (word count and/or presentation time):

Included when submitting the project

☐ A completed academic honesty form

☐ Process journal extracts

☐ Any supporting visual aids used during the presentation, if applicable

☐ Bibliography/sources

MYP Personal project ACADEMIC HONESTY FORM

Student name:	
Student number:	
School name: Ramallah Friends School	
School number: 001109	
Supervisor name:	

Student:
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.

Supervisor:
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.

Date	Main points discussed	Signature/initials
Meeting 1		Student: Supervisor:
Meeting 2		Student: Supervisor:
Meeting 3		Student: Supervisor:

Supervisor comment

Student declaration
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).

Supervisor declaration
I confirm that, to the best of my knowledge, the material submitted is the authentic work of the student.

Student's signature	Date
Supervisor's signature	Date

International Baccalaureate Middle Years Programme
MYP Personal Project
2020-2021

Supervisor Information and Agreement

Student Name: _____

Dear Student: Please give this form to your project supervisor to read and complete. Forms should be submitted to the MYP Personal Project Coordinator.

Information for all Supervisors:

Students in the International Baccalaureate Middle Years Programme (IB MYP) are completing a Personal Project as their culminating 10th grade assignment. The Personal Project can take many forms - a work of art, a science experiment, a community service project - but it is a long-term project based in an area of interest for the student. Each student is required to have a supervisor to offer consistent guidance and feedback and to monitor the student's progress along the project timeline. As a supervisor, you will:

- Be given a guide which explains the MYP Personal Project and your responsibilities.
- Understand and adhere to the deadlines, requirements of the personal project, and assessment criteria as presented in the guide.
- Attend mandatory supervisor meetings and standardized scoring during the school year.
- Meet with your student(s) on a regular basis (typically at least once each month) between now and the deadline for submission to monitor progress, give feedback, and offer suggestions for next steps. IB requires a minimum of three meetings.
- Contact the IB MYP Coordinator if your student(s) are not fulfilling the project requirements.
- Complete a final evaluation of your student(s)' work using the IB MYP assessment criteria for the Personal Project and submit it to the IB MYP Coordinator.

To be completed by supervisors:
Supervisor Name:

_____

Position & School: _____

Signature_____

Your signature on this form indicates agreement to the duties listed above.

Parent / Guardian Signature _____

Parent/ Guardian Telephone: _____

Parent/ Guardian Email: _____

Approaches to Learning (ATL) skills

<table>
<tr>
<td rowspan="2">Communication</td>
<td><i>How can students communicate through interaction?</i></td>
<td>Exchanging thoughts, messages and information effectively through interaction

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
Participate in, and contribute to, digital social media networks
Collaborate with peers and share ideas with multiple audiences using a variety of digital environments and media.
</td>
</tr>
<tr>
<td><i>How can students demonstrate communication through language?</i></td>
<td>Reading, writing and using language to gather and communicate information

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 for different purposes
Understand and use mathematical notation
Paraphrase accurately and concisely
Preview and skim texts to build understanding
Take effective notes in class/Make effective summary notes for studying
Use a variety of organizers for academic writing tasks
Organize and depict information logically/Structure information in essays and reports
</td>
</tr>
<tr>
<td>Collaboration</td>
<td><i>How can students collaborate?</i></td>
<td>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 / Advocate for one's own rights and needs
Manage and resolve conflict and work collaboratively in teams
Build consensus
Make fair and equitable decisions
Listen actively to other perspectives and ideas / Give and receive meaningful feedback
Negotiate effectively
Encourage others to contribute / Exercise leadership and take on a variety of roles within groups
</td>
</tr>
</table>

Self-Management	***Organization*** ***How can students demonstrate organization skills***	**Managing time and tasks effectively** • Plan short- and long-term assignments; meet deadlines / Keep and use a weekly planner • Create plans to prepare for summative assessments (examinations and performances) • Set goals that are challenging and realistic • Plan strategies and take action to achieve personal and academic goals • Bring necessary equipment and supplies to class • Keep an organized and logical system of information files/notebooks • Use appropriate strategies for organizing complex information • Select and use technology effectively and productively
	Affective ***How can students manage their own state of mind?***	**Managing state of mind** • **Mindfulness:** Practice focus and concentration, strategies to develop mental focus and to overcome distractions, being aware of body–mind connections • **Perseverance** Demonstrate persistence and perseverance and delaying gratification • **Emotional management** Practice strategies to overcome impulsiveness and anger, prevent and eliminate bullying, and reduce stress and anxiety • **Self-motivation** Practice analyzing and attributing causes for failure, managing self-talk, and positive thinking • **Resilience** Practice: "bouncing back" after adversity, mistakes and failures; "failing well"; dealing with disappointment and unmet expectations; dealing with change
	Reflection ***How can students be reflective?***	**(Re)considering the process of learning; choosing and using ATL skills** • Develop new skills, techniques and strategies for effective learning • Identify strengths and weaknesses of personal learning strategies (self-assessment) • Demonstrate flexibility in the selection and use of learning strategies • Try new ATL skills and evaluate their effectiveness • Consider content: What did I learn about today? What don't I yet understand? What questions do I have now? • Consider ATL skills development: What can I already do? How can I share my skills to help peers who need more practice? What will I work on next? • Consider personal learning strategies: What can I do to become a more efficient and effective learner? How can I become more flexible in my choice of learning strategies? What factors are important for helping me learn well? • Focus on the process of creating by imitating the work of others • Consider ethical, cultural and environmental implications • Keep a journal to record reflections

Research	***Information Literacy How can students demonstrate 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 analyze data to identify solutions and 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 • Understand and implement intellectual property rights • Create references and citations, use footnotes/endnotes and construct a bibliography according to recognized conventions • Identify primary and secondary sources
	Media Literacy Skills How can students demonstrate media literacy?	**Interacting with media to use and create ideas and information** • Locate, organize, analyze, 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

Thinking	Critical Thinking How can students think critically?	**Analyzing and evaluating issues and ideas** • Practice observing carefully in order to recognize problems • Gather and organize relevant information to formulate an argument • Recognize unstated assumptions and bias • Interpret data • Evaluate evidence, arguments and propositions • Draw reasonable conclusions and generalizations; Test generalizations and conclusions • Revise understanding based on new information and evidence • Evaluate and manage risk • Formulate factual, topical, conceptual and debatable questions • Consider ideas from multiple perspectives • Develop contrary or opposing arguments • Analyze complex concepts and projects into their constituent parts and synthesize them to create new understanding • Propose and evaluate a variety of solutions • Identify obstacles and challenges • Use models and simulations to explore complex systems and issues • Identify trends and forecast possibilities • Troubleshoot systems and applications
	Creative Thinking How can students be creative?	**Generating novel ideas and considering new perspectives** • Use brainstorming and visual diagrams to generate new ideas and inquiries • Consider multiple alternatives, including those that might be unlikely or impossible • Create novel solutions to authentic problems • Make unexpected or unusual connections between objects and/or ideas • Design new machines or improvements to existing machines, media and technologies • Apply existing knowledge to generate new ideas, products or processes • Make guesses, ask "what if" questions and generate testable hypotheses • Create original works and ideas; use existing works and ideas in new ways • Practice flexible thinking—develop multiple opposing, contradictory and complementary arguments • Practice visible thinking strategies and techniques • Generate metaphors and analogies
	Transfer How can students transfer skills and knowledge across disciplines and subject groups?	**Using skills and knowledge in multiple contexts** • Use effective learning strategies in subject groups and disciplines • Apply skills and knowledge in unfamiliar situations • Inquire in different contexts to gain a different perspective • Compare conceptual understanding (make connections) across multiple subject groups and disciplines • Combine knowledge, understanding and skills to create products or solutions • Transfer current knowledge to learning of new technologies • Change the context of an inquiry to gain different perspectives