

IB MYP 6 S1Design (Grade 6) jni

## Summary

### Robotics Draft

Subject	Year	Start date	Duration
Design	Grade 6	Week 2, September	<span style="background-color: #f96;">11 weeks</span> 30 hours

## Key and Related Concepts

### Key Concepts

Key Concepts	Definition



**Systems** are sets of interacting or interdependent components. Systems provide structure and order in human, natural and built environments. Systems can be static or dynamic, simple or complex.

Systems

### Related Concept(s)

Collaboration, Function

## Inquiry

### Conceptual Understanding

Collaboration of systems affects their function

### Global Context

Global Context	Explorations to develop



Scientific and technical innovation

Systems, Models, Methods, Products, Processes and solutions

### Statement of Inquiry

Programming a robotic system can have different perspectives, that affect the way it functions.

## Inquiry Questions

Type	Inquiry Questions
Factual	What can Robots do today?
Conceptual	How can we program the EV3 robots?
Debatable	Is the use of Robots making humans less able and tardy?
Factual	What are the advantages and disadvantages of using Robots
Conceptual	How can we assemble an EV3 Robot?

## Curriculum

### MYP subject group objective(s)

#### **A: Inquiring and analysing**

- ii. state and prioritize the main points of research needed to develop a solution to the problem
- iii. describe the main features of an existing product that inspires a solution to the problem
- iv. present the main findings of relevant research

#### **B: Developing ideas**

- i. develop a list of success criteria for the solution
- ii. present feasible design ideas, which can be correctly interpreted by others
- iii. present the chosen design

#### **C: Creating the solution**

- i. outline a plan, which considers the use of resources and time, sufficient for peers to be able to follow to create the solution
- ii. demonstrate excellent technical skills when making the solution
- iii. follow the plan to create the solution, which functions as intended
- iv. list the changes made to the chosen design and plan when making the solution

#### **D: Evaluating**

- i. outline simple, relevant testing methods, which generate data, to measure the success of the solution
- ii. outline the success of the solution against the design specification
- iii. outline how the solution could be improved

 Skills

- All of the tasks/skills will be based on the criteria required to fulfill the design process (Inquiring, Developing, Creating and Evaluating)
- The ability to follow instruction manuals to build robots
- Labelling and describing different sensors of robots they will use.
- Use of programming packages to program their EV3 Robot.
- The skill of using video tutorials to independently carry out tasks.
- Use of Google classrooms and online based portfolios.
- Use of testing and modelling to solve the problem.

 ATL Skills ATL skills

Description

**Learning Experiences:****Communication:**

## I. Communication skills

**In order for students to,** (design objective B iii), present the chosen design **they will need to,** (I. Communication skills - 1) Give and receive meaningful feedback. **The skill strategies that will be explicitly taught and practised are:** Students will use Google drives platform to present their work, receive feedback from the teacher and then reply to the feedback using the “reply” buttons/tools.

**In order for students to,** (design objective B ii), present a range of feasible design ideas, which can be correctly interpreted by others **they will need to,** (I. Communication skills - 9) Collaborate with peers and experts using a variety of digital environments and media. **The skill strategies that will be explicitly taught and practised are:** Students will learn to work in pairs to make and program their robot EV3.

**In order for students to,** (design objective C v), present the solution as a whole **and** (design objective A ii). construct a research plan, which states and prioritizes the primary and secondary research needed to develop a solution to the problem **they will need to,** (I. Communication skills - 23) Organize and depict information logically. **The skill strategies that will be explicitly taught and practised are:** Students will learn how to convert work into a digital format and use a present tool in Google Classroom to share their work. Students will also learn to organise their research plan into a table.

**Social:**

## II. Collaboration skills

**In order for students to,** (design objective B ii), present a range of feasible design ideas, which can be correctly interpreted by others **they will need to,**(II. Collaboration skills – 6 Manage and resolve conflict and work collaboratively). **The skill strategies that will be explicitly taught and practised are:** Students will learn to work in pairs to make and program their robot EV3.

**Self-management:**

## III. Organization skills

**In order for students to,** (design objective C ii), demonstrate excellent technical skills when making the solution **they will need to,** (III. Organization skills - 6) Bring necessary equipment and supplies to class. **The skill strategies that will be explicitly taught and practised are:** Students will need to bring their own devices (Laptop / Camera / Smartphones etc) So they can work through their e-portfolios on Google classrooms. Cameras or smartphones will be used to take images of any work done on paper to transfer onto their portfolio.

**In order for students to,** (design objective A iii). Describe the main features of an existing product that inspire a solution to the problem **they will need to,** (III. Organization skills - 8) Use appropriate strategies for organizing complex information. **The skill strategies that will be explicitly taught and practised are:** Learn how to summarise and present complex information in the form of diagrams and Mindmaps. Use labels and sub headings to provide a structure for describing and stating the main features of a EV3 Robot.

**In order for students to,**(design objective iii follow the plan to create the solution, which functions as intended and they will need to, (V. Reflection skills - 23) Focus on the process of creating by imitating the work of others. **The skill strategies that will be explicitly taught and practised are:** Students will need to follow instructions from the manual to build the robot effectively.

#### Research:

VI. Information literacy skills

**In order for students to,** (design objective C ii), demonstrate excellent technical skills when making the solution **they will need to,** (VI. Information literacy skills -10) Understand and use technology systems. **The skill strategies that will be explicitly taught and practised are:** Students will learn how to use EV3 Mindstorm software to program their robot to carry out different tasks.

VII. Media literacy skills

**In order for students to,** (design objective C v), present the solution as a whole **they will need to,** (VII. Media literacy skills - 18) Understand the impact of media representations and modes of presentation. **The skill strategies that will be explicitly taught and practised are:** Students will learn to present their work and designs in the form of an e-portfolio.

#### Thinking:

VIII. Critical thinking skills

**In order for students to,** (design objective C ii), demonstrate excellent technical skills when making the solution **they will need to,** (VIII. Critical thinking skills - 17) Use models and simulations to explore complex systems and issues. **The skill strategies that will be explicitly taught and practised are:** Using youtube video tutorials and online “help support” to learn how to use “EV3 Mindstorm” (programming software) as well as diagnose any issues they face during the use of the robot and software. Students will also learn about input and output processes in robotics.

X. Transfer skills

**In order for students to,** (design objective C ii), demonstrate excellent technical skills when making the solution **they will need to,** (X. Transfer skills - 37) Combine knowledge, understanding and skills to create products or solutions. **The skill strategies that will be explicitly taught and practised are:** Students will learn new programming software (EV3 Mindstorm) to program their robot to carry out tasks.



#### Communication

- I. Communication skills

Exchanging thoughts, messages and information effectively through interaction

1. Give and receive meaningful feedback

9. Collaborate with peers and experts using a variety of digital environments and media

Reading, writing and using language to gather and communicate information

23. Organize and depict information logically

**Social****- II. Collaboration skills**

Working effectively with others

6. Manage and resolve conflict and work collaboratively in teams

**Self-management****- III. Organization skills**

Managing time and tasks effectively

6. Bring necessary equipment and supplies to class

8. Use appropriate strategies for organizing complex information

**- V. Reflection skills**

(Re-)considering the process of learning; choosing and using ATL skills

23. Focus on the process of creating by imitating the work of others

**Research****- VI. Information literacy skills**

Finding, interpreting, judging and creating information

10. Understand and use technology systems

a) I can navigate through an academic database eg. PebbleGo, JStore

**- VII. Media literacy skills**

Interacting with media to use and create ideas and information

18. Understand the impact of media representations and modes of presentation

a) I create works that are appropriate in style, tone and structure for the required genre, e.g. essay, report, speech, resume, letter, etc

**Thinking****- VIII. Critical thinking skills**

Analysing and evaluating issues and ideas


17. Use models and simulations to explore complex systems and issues

**- X. Transfer skills**

Utilizing skills and knowledge in multiple contexts

37. Combine knowledge, understanding and skills to create products or solutions

IB MYP 6 S1Design (Grade 6) jni

 **Developing IB Learners** **IB Learner Profile****Inquirers****Communicators****Risk-takers (Courageous)****Description****Inquirers:**


Finding out information about robots and particularly the EV3 Mindstorm robots.

**Communicators:**

Communicating in groups of two and three to come up with solutions to the problems given.

**Risk takers:**

Programming the robot. Sometimes the program may not work, so testing it and developing it to make it work is necessary.

 **Connections** **Service as Action****Persevere in action:**

Program their robots to carry out various actions and tasks.

 **Assessment** **MYP Assessment Criteria**N/A  A: Inquiring and analysingN/A  B: Developing ideasN/A  C: Creating the solutionN/A  D: Evaluating

IB MYP 6 S1Design (Grade 6) jni

 Stream & Resources Resources**Moneeb Minhas**

Posted 1 file on Oct 21, 2017 at 5:13 PM

**E-portfolio and STUDENT WORKBOOK**

You will find all tasks for this project in this document.



G6\_-\_NAME\_\_Robotics\_Proj\_STUDENT\_WORKBOOK.pptx

2 MB PowerPoint Presentation