Design Course Outline

Overview

Technology and technological developments have given rise to profound changes in society, transforming how we access and process information, how we communicate with others and how we work and solve problems.

The MYP holistic approach to teaching and learning acknowledges that inquiry and problem solving contribute to students' development of thinking skills and strategies that will equip them to face the rapidly changing demands of the 21st century.

MYP technology aims to provide the means and the context to help students become skilful problem solvers, who can appreciate the role of technology in everyday life and society and who can respond critically and resourcefully to real-life challenges.

Students use the Design Cycle: a cyclic approach to problem solving that involves investigation, planning, creation and evaluation in order to achieve technological goals. The Design Cycle is used to generate ideas; when making a new product, improving on an existing one, or solving problems through research, analysis and reflection. Understanding how problems can first be framed and then solved systematically is a key aspect of technology that has life-long benefits.

The MYP technology course intends to challenge all students to apply practical and creative-thinking skills to solve problems in technology, encourage students to explore the role of technology in both historical and contemporary contexts and raise students' awareness of their responsibilities as world citizens when making decisions and taking action on technology issues.

The approaches to learning (ATL) are key to each unit as the final assessment task will focus on one or a set of related skills. Using one of the Global Contexts (e.g. cultural expression or technical innovation) to focus each unit allows students to place learning in context and help students to develop positive attitudes and values based on knowledge and skills.

MYP design also helps to prepare students for overall success in the DP, and connects directly with their participation in creativity, action, service (CAS) and the extended essay. In CAS, students continue to develop skills in design and evaluation that they use to undertake new challenges, design and plan activities and solve problems in a creative way.

The knowledge, skills and attitudes that students develop in design courses provide a meaningful foundation for further study and help to prepare students for, among others:

careers in fashion, food, graphic, industrial, instructional, multimedia, product, publications

video game and web design

architecture

education

roles in engineering, manufacturing, advertising and media industries

project management

Aims of the Design Course*

The aims of the teaching and study of MYP Technology are to encourage and enable students to:

- develop an appreciation of the impact of technology for life, society and the environment
- develop knowledge, understanding and skills from different disciplines to design and create products/solutions using the design cycle
- develop problem-solving, critical- and creative-thinking skills through the application of the design cycle
- enjoy the design process and develop an appreciation of its elegance and power

- act with integrity and honesty and take responsibility for their own actions developing effective working practices
- develop respect for others' viewpoints and appreciate alternative solutions to problems
- appreciate past, present and emerging design within cultural, political, social, historical and environmental contexts
- use and apply technology effectively as a means to access, process and communicate information, model and create solutions, and to solve problems

Much of the content and illustrative material used for the 'Units of Work' are taken from the Lithuanian National Curriculum materials and are matched to the MYP objectives appropriate to the age level and complexity of the material concerned.

Design units of work include:

Examples of units in MYP 1 – 5 include:

Numbers create beauty	Being safe in cyberspace	Safe, effective and professional email	Web design
Get to know the design cycle	Using the design cycle	Search Guru	Sort it out
Sunglasses for 2020	Get that interview	Decode the computer code	E-democracy – your voice matters
Computer science unplugged	How we construct a solution to a problem	How technology can influence the community	Let's protect the software copyright

A: Inquiring & Analysing

Grade 6	Grade 8	Grade 10
At the end of the first year, students should be able to:	*At the end of the third year, students should be able to:*	*At the end of the fifth year, students should be able to:*
explain and justify the need for a solution to a problem	explain and justify the need for a solution to a problem	explain and justify the need for a solution to a problem for a specified client/target audience
state and prioritize the main points of research needed to develop a solution to the problem	construct a research plan, which states and prioritizes the primary and secondary research needed to develop a solution to the problem	identify and prioritize the primary and secondary research needed to develop a solution to the problem
describe the main features of an existing product that inspires a solution to the problem	analyse a group of similar products that inspire a solution to the problem	analyse a range of existing products that inspire a solution to the problem
present the main findings of relevant research	develop a design brief, which presents the analysis of relevant research	develop a detailed design brief, which summarizes the analysis of relevant research

B: Developing Ideas

Grade 6	Grade 8	Grade 10
At the end of the first year, students should be able to:	*At the end of the third year, students should be able to:*	*At the end of the fifth year, students should be able to:*
develop a list of success criteria for the solution	develop a design specification, which outlines the success criteria for the design of a solution based on the data collected	develop a design specification, which clearly states the success criteria for the design of a solution
present feasible design ideas, which can be correctly interpreted by others	present a range of feasible design ideas, which can be correctly interpreted by others	develop a range of feasible design ideas, which can be correctly interpreted by others
present the chosen design	present the chosen design and outline the reasons for its selection	present the chosen design and justify its selection
create a planning drawing/ diagram, which outlines the main details for making the chosen solution	develop accurate planning drawings/diagrams and outline requirements for the creation of the chosen solution	develop accurate and detailed planning drawings/ diagrams and outline the requirements for the creation of the chosen solution

C: Creating the Solution

Grade 6	Grade 8	Grade 10
At the end of the first year, students should be able to:	*At the end of the third year, students should be able to:*	*At the end of the fifth year, students should be able to:*
outline a plan, which considers the use of resources and time, sufficient for peers to be able to follow to create the solution	construct a logical plan, which outlines the efficient use of time and resources, sufficient for peers to be able to follow to create the solution	construct a logical plan, which outlines the efficient use of time and resources, sufficient for peers to be able to follow to create the solution
demonstrate excellent technical skills when making the solution	demonstrate excellent technical skills when making the solution	demonstrate excellent technical skills when making the solution
follow the plan to create the solution, which functions as intended	follow the plan to create the solution, which functions as intended	follow the plan to create the solution, which functions as intended
list the changes made to the chosen design and plan when making the solution	explain changes made to the chosen design and plan when making the solution	fully justify changes made to the chosen design and plan when making the solution
present the solution as a whole	present the solution as a whole	present the solution as a whole

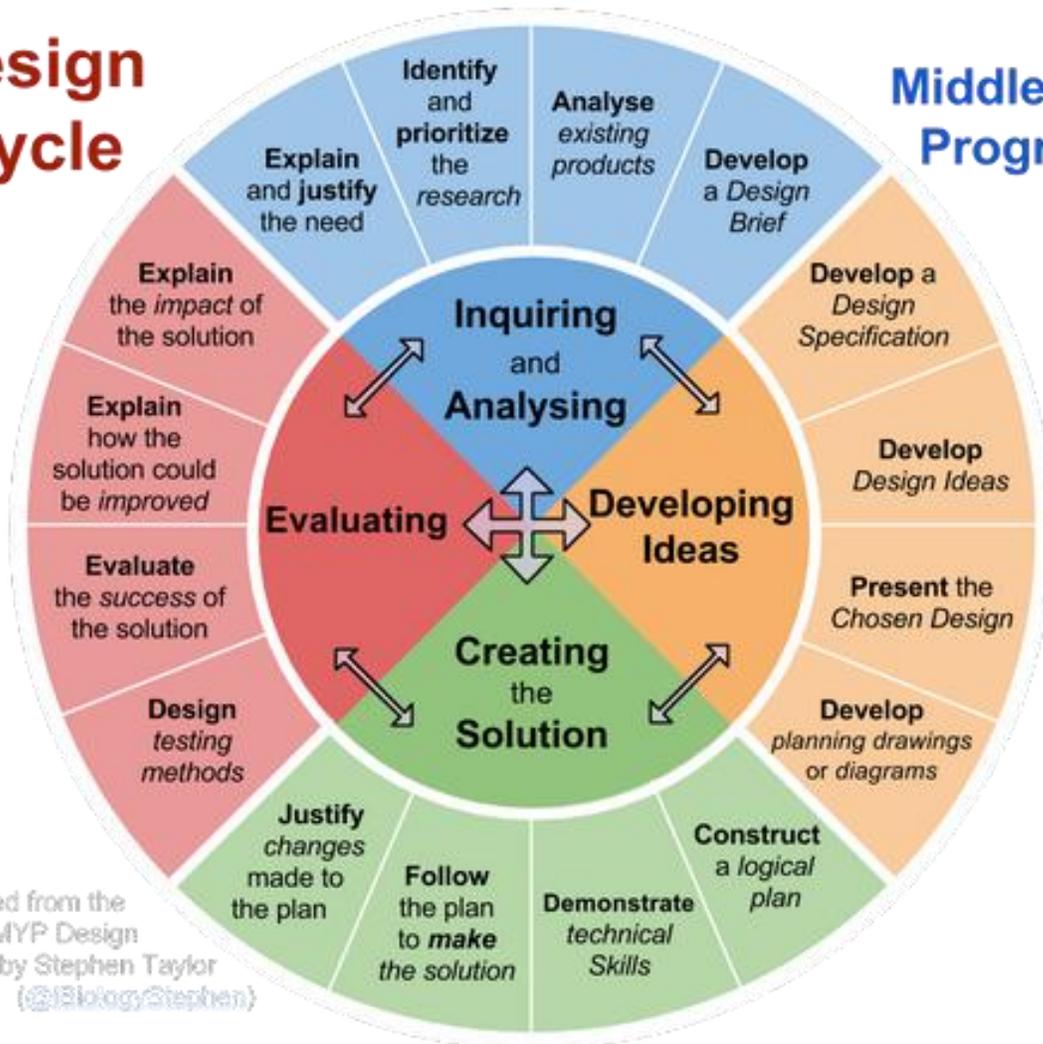| D: Evaluating		
Grade 6	**Grade 8**	**Grade 10**
At the end of the first year, students should be able to:	*At the end of the third year, students should be able to:*	*At the end of the fifth year, students should be able to:*
outline simple, relevant testing methods, which generate data, to measure the success of the solution	describe detailed and relevant testing methods, which generate accurate data, to measure the success of the solution	design detailed and relevant testing methods, which generate data, to measure the success of the solution
outline the success of the solution against the design specification	explain the success of the solution against the design specification	critically evaluate the success of the solution against the design specification
outline how the solution could be improved	describe how the solution could be improved	explain how the solution could be improved
outline the impact of the solution on the client/ target audience	describe the impact of the solution on the client/target audience	explain the impact of the solution on the client/ target audience

Design Cycle — Middle Years Programme

Inquiring and Analysing: Identify and prioritize the research; Analyse existing products; Develop a Design Brief

Developing Ideas: Develop a Design Specification; Develop Design Ideas; Present the Chosen Design; Develop planning drawings or diagrams

Creating the Solution: Construct a logical plan; Demonstrate technical Skills; Follow the plan to make the solution; Justify changes made to the plan

Evaluating: Design testing methods; Evaluate the success of the solution; Explain how the solution could be improved; Explain the impact of the solution; Explain and justify the need

Adapted from the IB MYP Design Guide by Stephen Taylor (@BiologyStephen)

Assessment is intended as an extension of the learning process for students, and this course gives students many different ways to demonstrate their understanding and skills. There are various assessment tools used in the Technology is primarily their products and design folders. Additional tools include observations, tests, peer assessments, performance tasks, checklist, rubrics, group tasks/presentations and student created rubrics.

In MYP 1 through MYP 5 student achievement in Design is assessed against the following four criteria:

1. **Inquiring & Analysing:** Students are presented with a design situation, from which they identify a problem that needs to be solved. They analyse the need for a solution and conduct an inquiry into the nature of the problem.

2. **Developing Ideas:** Students write a detailed specification, which drives the development of a solution. They present the solution.

3. **Creating the Solution:** Students plan the creation of the chosen solution and follow the plan to create a prototype sufficient for testing and evaluation..

4. **Evaluating:** Students design tests to evaluate the solution, carry out those tests and objectively evaluate its success. Students identify areas where the solution could be improved and explain how their solution will impact on the client or target audience.

MYP Final achievement Level	1	2	3	4	5	6	7
Total mark/32	1-5	6-9	10-14	15-18	19-23	24-27	28-32

In order for parents and students to appreciate grades in familiar contexts please see the tables below.

MYP Final achievement Level	1	2	3	4	5	6	7
Lithuanian system grades /10	1-2	3	4-5	6	7-8	9	10

MYP Final achievement Level	1	2	3	4	5	6	7
Letter grades	F	E	D	C-C+	B-B+	A	A+

*   All information is taken from the IB MYP Design Guide for 2014