# **LEADERS IN TECHNOLOGY**

# **Technology @The Study**

The Study is proud of its innovative use of technology to enhance learning and critical thinking, both inside and outside of the classroom. Technology is woven through the curriculum at all grade levels, from Kindergarten to grade 11. In grades 6 - 11, every student has a wireless laptop Mac computer and in Kindergarten - grade 5, every student has an iPad.



The goals of the technology programme, in conjunction with the academic programme, are to:

Stimulate students' intellectual curiosity by providing them with
opportunities to enhance traditional learning through innovative tools

Students in the elementary school beta testing a new educational app for the developers.

- Provide all students with learning tools that will enhance their learning
- Support higher order thinking skills and critical thinking skills
- Provide a global experience to the students via virtual classroom experiences and a plethora of research opportunities
- Inspire and provide students with the resources to innovate

In the Senior School and in the Elementary School, technology is fully integrated into the curriculum. Technology is used in research and study groups, for assignments, explorations, simulations, tutorials, Internet access and a myriad of networked applications.

Students in both the Elementary and Senior School have access to the latest software, interactive boards in each classroom, various audio visual equipment, a wide screen printer, a photography studio, a video IP conferencing unit and state of the art technology in the classroom.

Our learning management system (Haiku) also allows parents to access their daughter's work and her development. In conjunction with our "green" initiatives, technology is used as a tool for communication with parents.



Students in the Electronics class make a game for grade 2 students to enjoy.

# **Redesigning the Classroom Experience**

Never one to rest on our laurels, we launch new initiatives each year. One such initiative has been to redesign our classroom spaces for the global 21<sup>st</sup> Century learner. These spaces incorporate state of the art technology. The rooms have also been painted with a special paint that is transforming the learning environment.

Classrooms in The Study's Elementary School and Senior School now have walls and desktops that are covered in writable surfaces. The whole classroom has been transformed into a 360 degree-learning environment. It's all about student engagement.



Projectors on every wall allow students to be immersed in their learning.

IdeaPaint maximizes the space students need to collaborate, interact and discover new ways of learning and it encourages student participation. "The girls become so excited about their lessons, truly focused learners," adds grade 5 teacher, Ms. Jacobsen.

It is not only local learning environments like The Study that have embraced IdeaPaint but learning environments with a global reputation of being at the forefront of innovation. The Massachusetts Institute of Technology (MIT) is also a user of the latest in 360 degree learning environments.





Students learning about algorithms through dance routines.

# Programming

Starting in the 2013-2014 academic year, The Study shifted to teaching students to code at all grade levels.

**Kindergarten:** Creating Scribbling Machines, Coding through games, Learning about algorithms, Introduction to robots with Dash and Dot

**Grade 1:** Making electronic devices using LittleBits circuits

Grade 2: Programming games using Hopscotch

**Grades 3 & 4:** Coding games and interactive narratives in Scratch

Grades 5: Using code to create art.



Grade 8 students used the laser cutter to make a working lamp.

Grade 6: Programming with the micro:bit

**Grade 7:** Building circuits with the micro processor Arduino and programming it using a simplified version of C++.

**Grade 8:** Each student will build and wire a lamp. They will be using a laser printer and CNC Mill to cut the materials needed and illustrator to create their design files.

**Grade 9 Electronics Option:** Exploring several different disciplines including but not limited to: architecture, electrical engineering, mechanical engineering, computer engineering and 3D printing.

Grade 10 & 11 Integrated Technology Management

**Option:** Students in the ITM class, in groups of 2-5, create a start up company. The goal for their company is to create an app, using swift, that solves a real world issue. They then have to supply a business plan, a marketing plan and promo videos for their companies. Along with Xcode, PHP, photoshop and premiere are also taught.

"Whether you want to uncover the secrets of the universe, or you just want to pursue a career in the 21st century, basic computer programming is an essential skill to learn."

-STEPHEN HAWKING



Grade 9 & 10 students immersed in the live surgery.

#### **Global Outreach**

Last year, our global outreach initiatives included watching a live knee replacement surgery conducted by Dr. Chambers at Mount Carmel Hospital, participating in a holiday card exchange program with six different schools from around the world (Belarus, Taiwan, Moldova and Russia), as well as participating in an online video conference entitled Resistance Art: Art Live from the Middle East, where students had the opportunity to explore how visual arts have been used as a means of witnessing conflict.

## The Innovation Lab

The Innovation Lab is a place where students can drop in and work on personal projects ranging from circuitry, robotics, soldering and e-textiles to name a few. Work done in the Innovation Lab is fuelled by personal interest and growth. Some of the projects students have worked on include

building a radio, building a talking robotics head, cooking up some squishy circuits, playing with the mind controlled helicopter, as well as building and electrically wiring a doll house.

#### **Makerspace**

Inspired by the success of The Innovation Lab, The Study started the 2014-2015 academic year by unveiling a Makerspace; the first of its kind in a Quebec school. The Makerspace features 3d printers, a 3d scanner, a CNC Mill, Arduinos, Raspberry Pis, Makey Makeys, as well as materials for e-textiles. Our Epilog Laser Cutter allows students to cut and engrave in wood, steel or glass to name a few. In essence, it's a 21st century machine shop. Various saws, metal presses and tools also aid in building projects. The space features writable walls, projection on the floor, fiberoptic star field lights in the ceiling, robotics tables embedded in walls and moveable furniture so that the space can be best used to fit the needs of a class.



The Makerspace is the home for all tech and robotic classes in both the Elementary and Senior Schools.

A builder's workshop in the Makerspace.

The laser printer, located in the MakerSpace.

This year, we have added an additional room to our Makerspace; one that facilitates the building process.

Along with an Oculus RIft, we have also added a classroom set of virtual reality glasses, a Nikon KeyMission 360 camera and unity 3d software so that students can not only immerse themselves in educational virtual reality worlds but also create the content for these devices.

## **CLUBS**

## **Robotics**

The 2017-2018 school year also saw our Elementary and Senior robotics teams participate in competitive robotics at the First Lego League. During the year, teams won awards in Programming and Design.

Grades 2, 5, 6, 7 & 8 : Competitive Robotics - First Lego League.

Grades 3 & 4: Robotics Club - lunchtime activity.

Grades 7 - 11: AV Club - Students explore various forms of technology.





Senior Technovation team making it to the World Semi-Finals.



Grade 2 student competing at a First Lego League Competition.

Our grade 7 and 8 FLL team receiving an award at the provincial competition.



Grade 3 students presenting their robot at the Prime Minister's Science Fair.

## **Technovation**

Every year, Technovation challenges girls all over the world to build a mobile app that will address a community problem. Apps built have included: Govo (Go Volunteer) - an app that connects students with volunteering opportunities; Potluck - an app that allows restaurants to be able to donate leftover food to charities; Aurora - an app for GSA clubs and SOSafety - an app that sends your GPS location in a text to a predetermined contact list; Daily Dose - an app that tracks daily medicinal intake and On Your Own - an app that teaches students to live on their own with regards to finance, nutrition and job searches.





Grade 1 controlling a Sphero.



Grade 7 programming traffic lights using an Arduino.