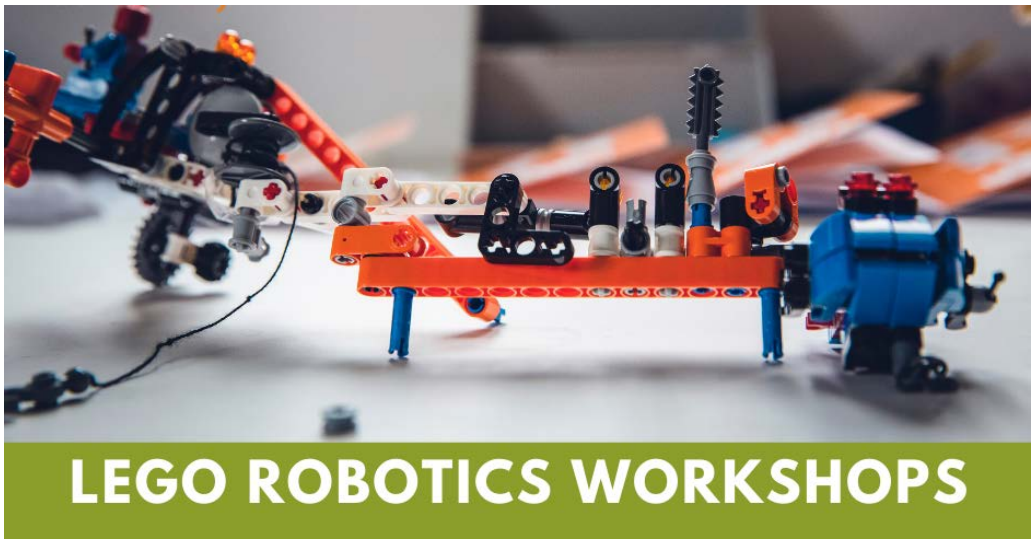
Lanark libraries inspiring the next generation through STEM

The Lanark STEM Program



Lanark STEM Committee

Lanark STEM Program 2022/2023

Introduction

Libraries throughout Lanark County share a mission – to inspire knowledge creation and promote lifelong learning. Libraries are the ideal place for youth to develop science, technology, engineering and mathematics (STEM) skills because libraries offer a range of programs and services for **all** residents free of charge. Our libraries help build an informed, engaged, creative and connected community.

STEM skills are essential for the next generation of innovators. STEM skills are not just for youth intending to pursue careers in engineering and computer science. Farmers need computer skills in their day-to-day farming operations from fixing equipment to digital cultivation software. Tradespeople need to navigate new technologies daily. Cultivating STEM skills helps prepare our youth for whatever path they choose to take.

STEM can be daunting. Fun and accessible STEM programs such as LEGO robotics, Tinkercad 3D printing workshops and scratch video game creation courses are big hits with kids and teens. Through robotics, computer coding and 3D printing workshops, participants learn and gain confidence to continue to expand interest and engagement in STEM.

The Mississippi Mills Public Library (MMPL) launched a STEM program that ran in 2020/21 (see Appendix C for more details). The pilot STEM program was more successful than anticipated and had overwhelming demand for workshops. Registration filled within 24 hours and workshop evaluations were glowing.

The success of the MMPL STEM Program has motivated libraries throughout Lanark County (libraries of Mississippi Mills, Carleton Place, Lanark Highlands, Perth and Smiths Falls) to launch the Lanark STEM Program. This program will give youth throughout Lanark County access to their very own high quality coding, electronics and robotics equipment and programs. To eliminate any financial barriers, the Lanark STEM Program will be free of charge.

In order to roll out STEM programs throughout Lanark, each library system will need in-house core STEM supplies. The MMPL already has these supplies from the pilot program. The Lanark STEM Committee, with representatives from each library system, will manage the program and a full-time STEM Coordinator will be responsible for planning, promoting and hosting STEM programs across all five library systems in the County. Working with the committee, MMPL will be responsible for program administration.

Budget

Item	Budget	Notes
STEM supplies	$52,000	Core STEM supplies –i.e. LEGO Robotics, laptops, 3D printer, Ozobots
STEM Coordinator	$53,000	
Administration	$2,000	
Program Management	**($20,000)**	**In-kind (all participating libraries)**
TOTAL	**$107,000**	

Funding

In the fall of 2020, the MMPL received funding from the federal government to hire a STEM Coordinator for a robotics and coding program. STEM supplies such as LEGO Mindstorms, a 3D printer and Ozobots are very expensive. The Elizabeth Kelly Library Foundation (EKLF) recognized the value in STEM programming and generously agreed to cover the cost of the STEM supplies for the pilot program.

An application for funding STEM supplies has been submitted to the Elizabeth Kelly Library Foundation. The Foundation provides funds on a matching basis only and will not support salary dollars. Apart from supplies, the **Lanark STEM Committee needs to raise approximately $55,000** to cover the annual contract for the Lanark STEM Coordinator and administration costs.

Timeline

Date	Item	Details
January-February	Confirm funding	The Elizabeth Kelly Foundation and other sources will be approached for matching funding requirements
March	Purchase STEM supplies	
April	Post job description for STEM Coordinator	
May-June	Coordinator contract – planning, promotion and registration	May 2022-May 2023
June 2022-May 2023	Program launch	

Appendix C

The MMPL STEM Program was launched in 2020. Following is a press release outlining the initial STEM programs.

Learn Robotics at the Mississippi Mills Public Library (2020)

The Mississippi Mills Public Library is offering Lego Robotics workshops at the Almonte Branch starting Saturday, November 7, 2020. These sessions are part of the Library's 2020/2021 STEM (science, technology, engineering, and mathematics) programming schedule. These innovative workshops are possible thanks to funding from the Elizabeth Kelly Library Foundation that enabled the Library to purchase STEM supplies including Lego Robotics, 3D printer and Ozobots.

Each Lego Robotics workshop consists of a challenge designed to teach students basic robotics and mechanical engineering concepts. Challenges are geared toward students who have never programmed or built a robot before. Following is the Lego Robotics workshops schedule.

November 7 – The Sumo Challenge
Campers will build their robot to wrestle an opposing robot out of a ring. Flippers and pushers are all allowed!

November 14 – Line Follower
Robots must be programmed to follow a black line. The most precise instead of the fastest robot wins.

November 21 – The Race Challenge
In the race challenge, the campers will learn about gear ratios and how to make a fast robot. At the end of the morning, the campers will race their robots in a derby!

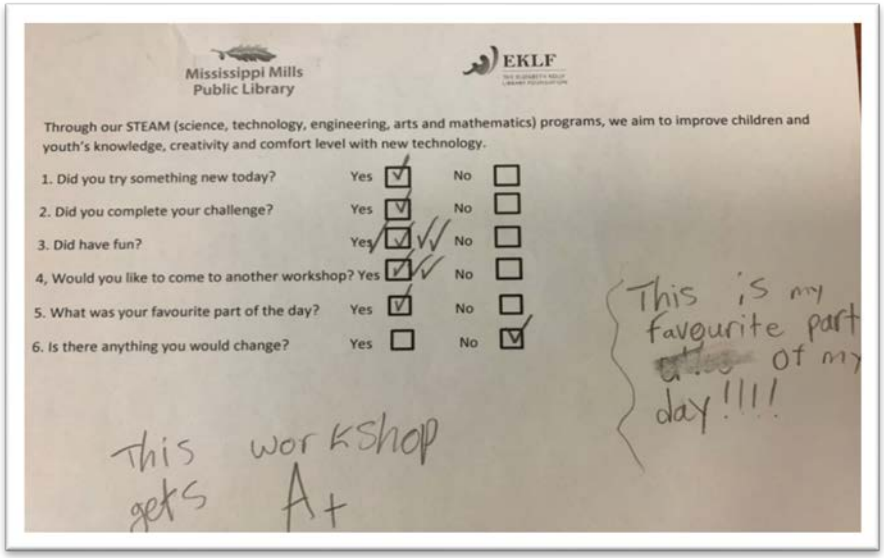
November 28 – Maze Challenge
To level up their robotics skills, campers will program their robot to complete a maze.

December 5 – Da Vinci Challenge
In the da Vinci challenge, the goal is to create the most beautiful work of art using only robots.

December 12- The Canada Arm Challenge
In this challenge, the campers will build a robotic arm.

Evaluation/Feedback

Registration filled immediately and children and parents were thrilled with the workshops.



Evaluation results

Did you try something new? YES -98%
Did you complete your challenge? YES- 90%
Did you have fun? YES – 100%
Would you like to participate in another workshop? YES- 98%
Is there anything you would change?
Is there anything you would change?

- No, just missed not going in person! (*had to offer some workshops online during the lockdown*)
- Not one thing !!!!
- Nothing, it is awesome!
- I would like more details in the gaming design--it would be fun to have a more advanced course to continue learning about game design

What was your favourite part of the workshop/event? (some responses below)

- Learning/making
- Playing with the game
- my favourite part of the day was in testing it at the end
- building the robot
- coding the directions for a maze
- programming it
- Completing the build and seeing it work.
- Playing the game after coding it
- The robot wrestling

What MMPL learned

- Hiring a STEM Coordinator through a summer/youth grant is too limiting. Students have limited time to dedicate to a program and require significant supervision. A mature, experienced coordinator may cost more per hour but will ensure high quality service with minimal supervision time.
- Offering STEM programming throughout Lanark County would enable the program to hire a full-time coordinator.
- A full-time position may appeal to more qualified people.
- If you have the right STEM Coordinator, children will come….in droves.