
IMH TEP'S

LEGACY ACADEMY



First Lego League Program

Annual Report: 2012-13

Executive Summary

Imhotep's Legacy Academy (ILA) is an effective science, technology, engineering and math (STEM) enrichment organization developed, implemented, and sustained in partnership with other organizations to redress the under-representation of African Canadians in postsecondary math and science as well as related careers. ILA offers participants in both junior high and high school important academic and social opportunities that may otherwise be inaccessible to them at no out-of-pocket cost.

This STEM outreach organization is guided by the belief that young learners will be motivated to regularly attend a program that features high-quality, interactive components that are intimately connected to their regular school curricula. University students studying STEM-related programs, act as project mentors/tutors to engage these youth in experiential learning through interactive science and math activities in a convivial atmosphere. Such after-school opportunities offer academic enrichment to African Nova Scotian students, in-person support for science and math-related school work, as well as motivation and inspiration which may otherwise be absent to encourage students to consider post-secondary studies and careers in STEM fields. These opportunities are realized in four strategically specific ILA programs: 1) The After-School Program, 2) Virtual School Program, 3) Summer Studentship Programs, and the newest in ILA's suite of programs, 4) the First Lego League.

ILA's First Lego League (ILFLL)

In partnership with Acadia's Robot Lending Library, ILA's First Lego League provides participants with opportunities for robot design and programming activities. Targeting youth between the ages of 9-14, ILA invites these students to take part in the Nova Scotia Regional FLL Robotics Competitions, during which time they have a chance to qualify for the Provincial Competition and to possibly be a part of the international competition. Each year, teams of young people design, build, and program robots using only Lego to perform specific tasks based on a specific theme. Since 2011, ILA has successfully hosted FLL programs in Halifax, Truro, Sydney and Antigonish.

The outstanding accomplishments of ILFLL teams this year undoubtedly make 2012-13 a year for the record books. With the August 2012 summer camp providing our teams with a great head start in their preparations for the regional and provincial competitions, ILFLL teams were well equipped for a successful year. The international FLL theme for competition, "Seniors Solutions", encouraged team members to research, investigate and explore issues that impact the lives of senior citizens on a daily basis and present/invent solutions to ameliorate these issues.

Robots were designed and programmed to complete challenges specific to this theme. (See Appendix A for missions)

This year, ILA had three teams participate in the FLL Regional Competitions which were held across Nova Scotia. These teams represented the Halifax, Truro and Sydney After-School sites. Two of these three teams were awarded special awards for their performance. Further, 3 ILFLL teams qualified for the Provincial Championships held on February 2, 2013, which was a record for ILA as only one team had qualified for these competitions in the previous year. Two teams actually participated in the Provincial Competition which was hosted by Acadia University and one team captured a special award over more than 30 other teams. The following summary report of the three sites which participated in ILFLL this year provides an account of how each team persevered through the many challenges and put ILA on the map as a force to be reckoned with in the growing world of FLL in Nova Scotia.

FLL Staff for 2012-2013

ILA Executive Director – Kèsa Munroe-Anderson

FLL Coordinator/Halifax Team Mentor – Reynaldo Dames

FLL Halifax Team Mentor – Chevy Phillips

FLL Truro Team Mentor – Ernest Korankye

FLL Sydney Mentor – Marlene Urquhart

FLL – Antigonish – no team in 2012-13

Halifax Staff: New to ILFLL in September 2012 were Coordinator Reynaldo Dames (currently pursuing the Bachelor of Computer Science program at Dalhousie University) and Halifax Team Mentor Chevy Phillips (currently pursuing a Bachelor of Engineering at Dalhousie University) Both staff members were trained by former ILFLL Coordinator for the 2011-12 academic year. The ILFLL Coordinator and Halifax mentor also had an opportunity to attend training with David Jellicoe, Information Technology instructor at the Nova Scotia Community College and a volunteer with FLL. Additionally, the ILFLL Coordinator had volunteered at the 2012 ILFLL summer camp and had an opportunity to become acquainted with some of the students interested in FLL as well as to understand the intricacies of the "Seniors Solutions" mission.

Truro Staff: The Truro mentor from the previous year, Ernest Korankye (pursuing a Masters in Plant and Environmental Science at Dalhousie University - Truro Campus) continued to coach the team this year. Such continuity proved to be important for the team, particularly since at the

end of the previous school year, the Truro mentor had begun to lead the team in exploring the “Seniors Solutions” theme.

Sydney Staff: Through partnerships established with the Cape Breton-Victoria Regional School Board’s Coordinator of Race Relations and Cross Cultural Understanding, ILA gained the leadership of Marlene Urquhart, the Board’s Math Coordinator and teacher – to coach a group of students in Sydney. ILA’s After-School Program Coordinator for Sydney – Aaron Marsman - was also called upon to assist with this team which consisted of mostly newcomers to FLL.

Antigonish Staff: Unfortunately, ILA lost its Antigonish mentor at the end of the previous academic year and was not successful in replacing this mentor in time to allow students in this area to participate in the competition. However, plans are in place for the After-School Mentor, Alma Zalo, (pursuing a Bachelor of Science in Physics at St. Francis Xavier University) who is also the After-School Program Coordinator, to serve as coach for the Antigonish team in 2013-14.

Staff Training: ILFLL staff attended the bi-annual ILA Professional Development Session held in October, where they had an opportunity to learn more about working with African Nova Scotian youth. Truro, and Halifax staff participated in workshops entitled “The Educational Realities of African Nova Scotian Learners in the Classroom”, which was facilitated by Sylvia Paris, Manager of African Nova Scotian Affairs in the fall of 2013, and “Supporting African Nova Scotian Learners: Addressing Social Issues that Impact their Academic Success”, which was facilitated by Adrienne Glasgow, Guidance Counselor at Prince Andrew High School, in the winter of 2013. Additionally, during the fall session, a round-Robin discussion was held where various African Nova Scotian teachers were invited to share their expertise on best practices for working effectively with African Nova Scotian youth. These workshops were important in providing ILFLL staff with cultural understanding about the students with whom they would be working. Therefore, staff found them extremely beneficial.

Teams

Truro

To say that the Truro team was excited about participating in FLL this year would be an understatement. There were 10 students registered in the Truro program in 2012-13. The team met twice per week on Wednesdays and Fridays starting in September and immediately began work on the research and presentation sections of their FLL competition requirements. After

receiving their FLL kits, participants divided themselves into three sections with one section of the team working on building the robot, another on programming the robot, and the last section working on the research.

In preparing for the Regional Competition, the Truro Team, under the leadership of their mentor, accessed help wherever they could. The team sought help from an NSCC instructor at the NSCC Truro Campus and this instructor facilitated a two hour workshop for them on the techniques of building and programming a robot. In addition to the ILFLL mentor attending the training, the After-School Program Coordinator and an After-School Program mentor also accompanied the team. The Truro team took this knowledge gained from the workshop and analyzed each mission to see what their approach would be and how to best execute it through their robot.

Despite the great excitement that propelled the Truro team into the start of the FLL year, leading up to the Regional Competition, the Truro team had some barriers to overcome. There were moments when team members got discouraged, tired or seemingly lost interest in trying to finish the project. Also, attendance became an issue and this affected the enthusiasm of others who were consistent in attendance. When the mentor noticed this happening he got in contact with the ILFLL Coordinator and the Executive Director. A meeting was set up that included the Halifax Team mentor to discuss issues and how best to go about solving them. Once this was done the mentor was able to take information gained to encourage the students to attend and participate in sessions and to work hard with them towards being more prepared. Additionally, Ernest sought help from an NSCC Trainer who volunteers with FLL by inviting this trainer to one of their November sessions to help the students prepare for the Regional Competition.

On November 24, 2012, the Truro team competed at the Regionals held at the NSCC Truro Campus, putting their best foot forward. At the end of the day, they won the Presentation Award which automatically advanced them into qualifying to compete at the Provincial Championships on February 2, 2013.

The determination of the Truro team to compete to the best of their ability at the Provincials was demonstrated in their decision to continue to meet and hold practice sessions even during their December break when school was closed. Although they celebrated the victory of the Presentation Award, the team also spent some time focussing on why their robot did not perform some of the missions. The team decided to redesign and re-program their robot to address some of the challenges it faced at the Regional Competition.



Figure 1. Hale Matthews and Nathan Morris, members of “Truro Top Robot” with judge at FLL Provincial Competition at Acadia University

The Truro team participated in the Provincial Competition at Acadia University on February 2, 2013 and gave their best effort. Although they did not receive any awards, all participants were commended on their teamwork and the hard work they had done to arrive at this point.



Figure 3. Truro Team with Coach/Mentor Ernest Korankye with their medals of participation at the end of the FLL Provincial Competition.

Transportation: When the outstanding commitment of Truro FLL members is considered, it must be noted that ILFLL’s provision of transportation by taxi for all students was crucial to

students actively participating this year. Students attending Truro Junior High School are bused in from various places of residence which, for ILFLL students, are not within walking distance to the school. Additionally, some parents and guardians are without personal transportation to transport their students from these After-School sessions twice per week. After each session, the mentor traveled with the participants in a taxi to each of their respective places of residence. Additionally, having student participants attend other training sessions and competitions also necessitated that taxi-cab or rental car transportation was required. Although this proved to be a costly expenditure for ILA, without the means to transport these students to their homes after sessions, they would not be able to participate in them.

Snacks/Food: Many times, the Truro team spent long hours (2 hours or more) at practice sessions, particularly as the competition approached and this meant that students would miss their supper time at home and would be hungry after working for a long period of time. This issue needed to be addressed in order to ensure that students were able to concentrate on completing the FLL missions and building the robot to the best of their ability. Therefore, sometimes pizza was ordered for the students and on other occasions, snacks like granola bars and juice boxes were provided.

Halifax

The Halifax Team had a discouraging start to the year. Initially, only two students were registered to be a part of the team at Oxford School. These two students were very dedicated to the team - which they named “Legos ‘R’ Us” – although they were the only students attending for most of the fall. They worked arduously on building the robot and programming it to complete some of the “Seniors Solutions” missions.

As a result of this low enrollment, a recruitment meeting was held at Oxford School. After the meeting, 12 students indicated interest. Whereas this was great news at first, the majority of these students would only show up for one or two sessions and then never return again. This reality was disappointing for the two members who were very dedicated to the team. However, the Halifax team did its best to cope with these situations while focusing on preparations for the Regionals.

When the attendance and participation issue was brought to the attention of the FLL Coordinator and the ILA Executive Director by the Halifax mentor, they both increased efforts to assist the Halifax Team. The FLL Coordinator began providing more in-person assistance to the Halifax team and the Executive Director sought other options for recruiting students.

The Coordinator found that the robot was on track as it was being built by more experienced members of the team. However, the team was behind on the research and presentation aspects of the competition. To address this issue, a decision was made to separate the meeting days to focus on 1) Research and Presentation on one day, and 2) building and programming the robot on the

next. The Coordinator also ordered T-Shirts for the team, so that they would look uniform at the competition.

Leading up to the Regionals held in Halifax, the team seemed to be falling apart and not ready at all for the competition, despite extra sessions being held on Saturdays at the ILA office at Dalhousie University. Some team members were still not showing up, which was continuing to frustrate and discourage the two faithful members. The Executive Director was able to recruit two students, one boy and one girl, from the ILA After-School program at Oxford, who were excited about becoming a part of the team. Although these students were only able to join the team one week before the competition, it became immediately obvious that they would fit in and work well with the team, which had not been the case with other participants in the previous weeks. Despite the enthusiasm and hard work for these two new students, with that of the other two students who had worked on the team from September, it was difficult for the team to make-up for lost time.

A meeting was held with the Executive Director, the FLL Coordinator, the Halifax team mentor, and the Halifax team a few days before the Regionals. A decision was made by the team to not participate in the Halifax Regionals, since one member was feeling extremely burdened by having the majority of the work falling on his shoulders. Instead, team members talked with the Coach and Coordinator and decided that they would attend the Regionals in Halifax on November 24 anyway as observers so that they would have a sense of what the competition entails. The team also attended and observed a St. Mary's Robotics Competition which took place at the Discovery Center on November 24

Despite the disappointment of not being ready to compete at the Halifax Regionals, the ILFLL Coordinator became aware of another Regional Competition that was happening in Middleton the following week and registered the team to compete there as Middleton is only a few hours away from Halifax by car. The team saw this as another opportunity to advance to the Provincials and competed in Middleton on December 1, 2012. Legos 'R'Us won the Judge's Choice Award at the Middleton Regional Competition, but this award did not qualify the team to advance to the Provincial Competition. Rather, the team, after waiting patiently for the announcement of the Wild Card winners, were overjoyed when they were one of the Wild Card teams chosen in their Region.

With a team of four dedicated students, Legos 'R' Us went into over-drive to prepare for the Provincial Championships(See Appendix B). The team met more than twice a week, practiced their presentation and demonstrated their robot at Oxford School for members of the Seniors of Upper Hammonds Plains to get their feedback. On competition day, February 2, 2013, the team's hard work and determination paid off as they captured the Technical Award and the Mechanical Design Award which earned them a field trip to visit the Michelin plant of their choice to see how tires are made. ILA Executive Director, Junior Program Officer, After-School

Program Coordinators and mentors, and parents/guardians were present to celebrate this victory with the Legos 'R' Us team which demonstrated that it is possible to overcome all obstacles and still succeed. (See Appendix C)



Figure 4. Technical Award and Mechanical Award winners Legos 'R' Us. Team members Teanna Sparks, Keyan Clayton, Ethan Smith, Isaiah Reade(front, from left to right) with Coordinator Reynaldo Dames (back left) and Coach/Mentor Chevy Phillips (back right).

The team participated in the Michelin plant field trip in April, 2013, where they visited the Granton site. The team was treated to lunch as well as a tour of the plant. See link below and Appendix D for more information: http://robots.acadiau.ca/news_and_coverage/news.php



Figure 4. ILFLL Legos 'R' Us Team, Coach/Mentor and Coordinator with Michelin's Dennis Langille (far left) and Dan Young (far right) after tour of Granton site.

Sydney Team

After a group of Sydney community stakeholders expressed interest in having an ILFLL team in Sydney, the Executive Director pursued this partnership and a Sydney Team was formed. Marlene Urquhart, a teacher at Harbour Side Elementary, volunteered to serve as coach of the team and recruited nine students for this team. Efforts were also made by ILA's After-School Program Coordinator in Sydney for two of students from this program to join these 9.

The Executive Director met with a team of Sydney representatives who would serve as support for this team including the Race Relations and Cross-Cultural Understanding Coordinator of the Cape Breton-Victoria Regional School Board (CBVRSB), the Coordinator of African Canadian Student Success at NSCC's Marconi and Sydney Campuses, and the FLL Training Representative at NSCC Marconi Campus.

Initially, technical problems with the processing of the FLL Registration of the Sydney Team delayed their ability to begin to prepare for the competition. However, the team was able to borrow a kit from NSCC so that they could begin preparations. In October, the team began to meet and prepare and ambitiously aimed to compete in the Regionals. A registration kit was sent to Sydney and the team continued to work towards competing in the Regional Competition, which they did on November 12, winning the Core Values Trophy. This award automatically qualified the Sydney Team to advance to the Provincial Competition.

The Sydney Coach planned and coordinated transportation for the team to attend the Provincials on February 2. However, these plans were soon thwarted when it was realized that another major community event was being held on the same date as the Provincials. People who had previously committed to chaperoning and transporting the team, were unable to do so because of commitments to this community event. Additionally, the Sydney Coach was unable to accompany the team due to a prior engagement abroad. These unforeseen circumstances, unfortunately, made it impossible for the Sydney Team to compete at the Provincial Competition. The distance between Sydney and Wolfville, where the competition was being held, along with CBVRSB policies made it difficult for other ILA staff in Metro or in Sydney to assist with transportation. It is hoped that the Sydney team will maintain their interest in FLL and become involved in a team next year.

Post-Competition:

After the FLL competitions, teams continued to meet to go over what worked, what did not work, and how to improve their robot during their sessions. The mentors also used post-competition sessions as a learning opportunity to teach more about the robots and also encourage the students to consider STEM programs when they are pursuing post-secondary education.

Additionally, ILFLL teams, like students in other ILA programs, prepared to present a display on their work during the school year. During the annual ILA Closing Ceremony, ILFLL Halifax students demonstrated their robot during the STEM Showcase which took place prior to the formal ceremony. During this time, students had an opportunity to speak to and answer questions from family and community members, school administrators and others about their robot. All ILFLL participants also had an opportunity to meet African American inventor Dr. James West, and African American physicist Dr. Nadya Mason who were the esteemed guest speakers for this year's ceremony.



Figure 5. Display created by Legos ‘R’ Us including the team’s Seniors Solutions presentation posters for Regional and Provincial Competitions, certificates and trophy won for Technical/Mechanical Design Award and Slide show of their robot.

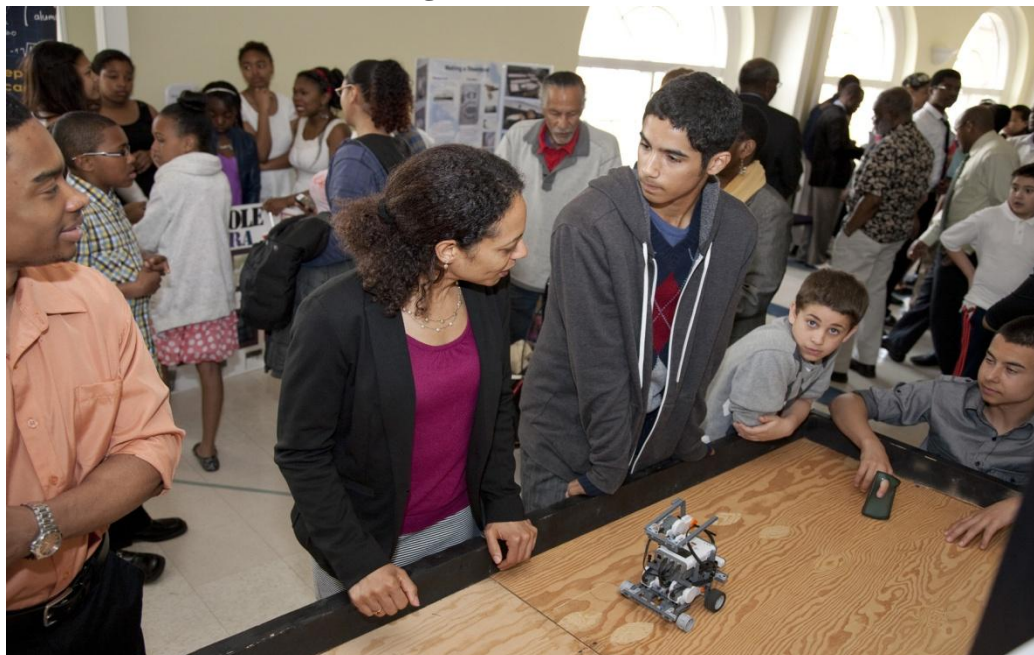


Figure 6. Legos ‘R’Us team members demonstrate their robot for Guest Speaker Dr. Nadya Mason during STEM Showcase of Closing Ceremony, May 11, 2013.

Success Stories:

- ILFLL was proud to celebrate the fact that three members of our First Lego League were awarded the 2013 TD Bank Opportunity Scholarship at our annual Closing Ceremony on May 11, 2013, at the Charles V. Keating Center at St. Francis Xavier University in Antigonish. Isaiah Reade (Halifax Team member – programmer), Teanna Sparks (Halifax team member and only girl on the team), and Haley Matthews (Truro team member, lead programmer and only girl on the team) received these scholarships (See Appendix F for article on Haley Matthews in Truro Daily News). The TD Bank Opportunity Scholarship promises recipients awards up to \$5000 per year upon enrolment in a STEM related program at Dalhousie University, provided they remain eligible for the scholarship throughout their secondary and post-secondary education (See Appendix G). TD Bank representative, Manager of the New Glasgow Branch Gayle MacDonald was on hand to make these presentations. (See Figures 7)
- Teanna Sparks accompanied ILA Executive Director Késa Munroe-Anderson as the student spokesperson on Global Morning, May 11, 2013. Teanna is a student in the ILFLL, ILASP and ILVSP. (See link at <http://globalnews.ca/video/550915/science-education-program>)
- At the Closing Ceremony each year, one student is awarded the Student of the Year Award for each ILA program. The ILFLL Student of the Year for 2013 is Isaiah Reade, and Haley Matthews, who is also an ILASP student, won the Truro After-School Program Student of the Year Award. In addition to a trophy, each winner also received a Samsung tablet. (See Figure 8)
- Haley Matthews spoke at Closing Ceremony, telling those attending that ILA’s programs have helped both academically and socially, encouraging her to pursue a career in a STEM field when she completes high school. Haley, the lead programmer of the Truro ILFLL Team also initiated mentoring another team member to take her place as lead programmer as she leaves the team to move on to high school in the coming year.



Figure 7. TD Bank Opportunity Scholarship Award winners Haley Matthews (top), Teanna Sparks (middle) and Isaiah Reade (bottom) receiving their TD Bank Scholarship certificates at ILA’s Closing Ceremony from Gayle MacDonald, TD Bank Manager, New Glasgow.



Figure 8. ILA’s Students of the Year awardees including Isaiah Reade, ILFLL Student of the Year for the FLL program, and Haley Matthews, Student of the Year for the After-School Program (Truro).

Conclusion

This year, the tenacity of the ILFLL teams and their members has been demonstrated through the fact that they all persevered over obstacles to achieve success, each in their own way. Their efforts have resulted in a resurgence of ILA pride amongst ILFLL team members, staff, and the ILA organization as a whole.

However, the success of the student participants must also be attributed in part to the stalwart support and guidance offered by their Coordinator and coaches/mentors. Participants and staff of the ILFLL are required to devote more time to their program on a weekly basis (with sessions held twice per week and more often when preparing for competitions) than any other ILA program. Therefore, the hard work and determination of these participants and their staff is admirable and must be commended. The success of the ILFLL this year is truly a testament to the fact that with encouragement, support and mentorship, African Nova Scotian students can succeed in STEM related activities, programs and academics.

It is with much hope that I see even more of the ILA sites to participate in the upcoming year. With hard work and discipline anything can be achieved. Here's to another successful year in FLL!

technology innovation ingenuity creativity

Lego Mindstorms NXT at ILA

The Lego Mindstorms NXT is an interesting engaging tool for young minds. It stimulates student's curiosity and challenges their critical thinking as they use a simple drag-and-drop programming environment to issue commands to their robots. These commands could range from easy tasks such as navigating a maze, dancing to no rhythm, or taking a walk; to complex ventures such as detecting and correcting inconsistencies, grabbing patents and administering medication.

In working with Lego Mindstorms NXT and ILA mentors, students...

- ... explore basic concepts in computer programming.
- ... are given an opportunity to apply classroom knowledge of Scientific, Technological, Engineering and Mathematical parameters such as length, displacement, speed, acceleration, force, etc, in a fun environment.
- ... learn the importance of team spirit and professionalism as they are afforded a chance to participate in the First Lego League Challenge, an annual competition held in several regions around the world.

For more information, please call (902) 449-7909 or email ld4351@dal.ca

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Figure 8. ILFLL Poster on display during STEM Showcase at 2013 Closing Ceremony.

Reported by: Reynaldo Dames, ILFLL Coordinator
 Késa Munroe-Anderson, Executive Director

Appendix A.



Robot Game — Missions

KEEP IN MIND: You LOVE a senior. You will BE a senior. The Senior SolutionsSM challenge is about concepts that affect everyone, directly and indirectly, both now and later.

Seniors need and want the same things they did when they were young – the same things YOU want. They want to be:

INDEPENDENT – to do what they want, when they want, the way they want (no matter where they live)

ENGAGED – to feel needed, and productive, and to have fun

CONNECTED – to have meaningful relationships with family and friends

Seniors have wisdom and perspective, from a full lifetime of experience. The problem is that the older we get, the more difficult life gets. We lose strength, speed, flexibility, and memory. Our hearing, eye sight, and other senses are diminished. It's harder to get around. Health problems creep in. Loved ones pass away. New technologies are unfamiliar to us...

In the Senior Solutions robot game, you and your robot will manage a mix of challenges and activities related to being independent, engaged, or connected. None of them really has to do with being "old," but a few of them have a harder version and an easier version. As you notice how much harder the hard versions are, and design your robot to master them, imagine what innovative technical designs and improvements you could make in real life that would make life easier for seniors – for your loved ones, and for your future self!

FRIENDLY WARNING: While it's obvious that everyone needs to become an expert on the details of the [Missions](#) below, it's also EXTREMELY IMPORTANT for everyone, vets as well as rookies, to read the OTHER THREE CRITICAL ROBOT GAME PAGES: [Field Setup](#) + [Rules](#) + [Updates](#) and go back to them repeatedly. Look at the benefits...

TEAMS WHO READ EVERYTHING

- have fewer questions
- have less rework
- have fewer surprises at tournaments
- score higher
- have more fun

TEAMS WHO DON'T

- operate in a fog
- start over and lose time
- learn a lot from... referees
- lose points
- get stressed

WOOD WORKING

Basic Description: Robot gets the chair to Base. You fix the chair by hand. Robot brings the chair to the table.

PRECISE SCORING CONDITIONS:

— Chair is fixed and in Base: **15**

— OR —

— Chair is fixed and any part of it is in the space under the table: **25**

Example - NO SCORE



Example - SCORE



MEDICINE

Basic Description: The bottles are arranged randomly before the start of each match (See Field Setup). Robot gets the green medicine bottle to Base without disturbing orange ones.

PRECISE SCORING CONDITIONS:

— Green bottle in Base and no orange bottles obviously moved or angled out of setup position: **25**

SERVICE ANIMALS

Basic Description: Robot applies force to gray disc, causing dog with phone to move toward Base.

PRECISE SCORING CONDITIONS:

— Dog is in Base: **20**

METHOD RESTRICTION:

— The dog’s initial movement to Base must be caused by a push or impact to the gray disc.

BOWLING

Basic Description: Robot sends balls to knock pins down. If the pins are not all down after the first try using a yellow ball, the referee returns that ball to Base for a second try (this can only happen once per match).

PRECISE SCORING CONDITIONS:

— 1 to 5 pins down: **7 EACH**

— OR —

— 6 pins down: **60**

METHOD RESTRICTION:

— Each pin’s fall must be caused by impact from a completely loose and independent ball (not touching or guided by anything at the time of impact) or another loose/independent pin. Pins falling for any other reason are worth 0.

STRENGTH EXERCISE

Basic Description: Robot lifts the west bar to make the weight rise.

PRECISE SCORING CONDITIONS:

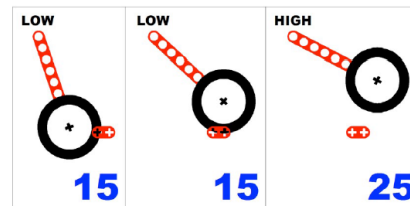
— Weight height equal to or between the ones labeled **LOW: 15**

— OR —

— Heights equal to or higher than the one labeled **HIGH: 25**

METHOD RESTRICTION:

— The weight must rise due to the west bar being lifted.



STOVE

Basic Description: Robot gets all burners to show black.

PRECISE SCORING CONDITIONS:

— All 4 burners black: **25**

GARDENING

Basic Description: Robot adds to the garden.

PRECISE SCORING CONDITIONS:

— Plant’s base touching a white target area: **25**

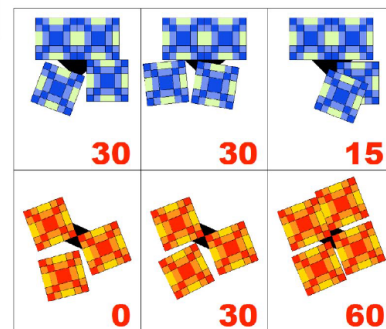


VIDEO CALL

Basic Description: Robot gets the flags to rise.

PRECISE SCORING CONDITIONS:

— Flags all the way up: **20 EACH**



QUILTING

Basic Description: Robot adds squares to quilts.

PRECISE SCORING CONDITIONS:

— Blue quilt squares touching their black target regions: **15 EACH**

— ALSO —

— Orange quilt squares touching their black target area: **30 EACH**

Remember to check the [Robot Game Updates](#) often as new posts may affect your team strategy.

CARDIOVASCULAR EXERCISE

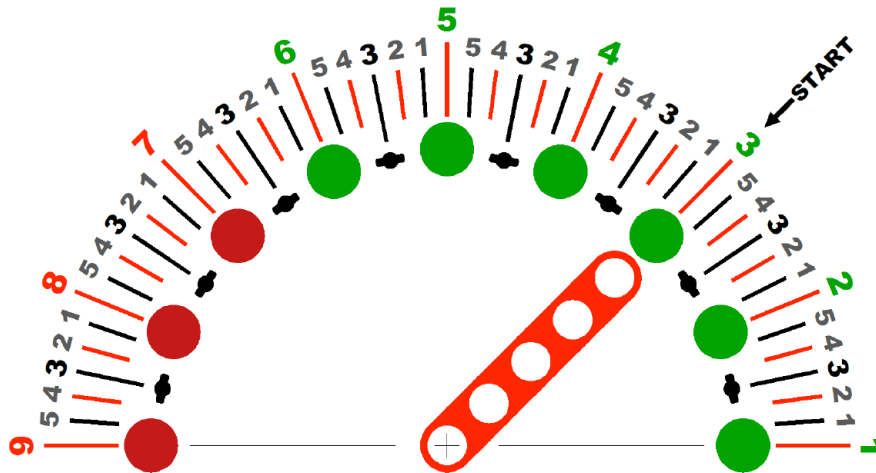
Basic Description: Robot turns the pinwheel 90° at a time.

PRECISE SCORING CONDITIONS:

— Points are shown in red on the chart.

METHOD RESTRICTION:

— Between every click of the wheel and the next, the robot must get completely into Base at least once.



POINTER POSITION	POINTS
9-0	118
8-5	117
8-4	116
8-3	115
8-2	114
8-1	113
8-0	112
7-5	111
7-4	110
7-3	109
7-2	108
7-1	107
7-0	106
6-5	103
6-4	100
6-3	97
6-2	94
6-1	91
6-0	78
5-5	75
5-4	72
5-3	69
5-2	66
5-1	63
5-0	60
4-5	55
4-4	50
4-3	45
4-2	40
4-1	35
4-0	30
3-5	25
3-4	20
3-3	15
3-2	10
3-1	5
3-0	0
2-5	-5
2-4	-10
2-3	-15
2-2	-20
2-1	-25
2-0	-30
1-5	-35
1-4	-40
1-3	-45
1-2	-50
1-1	-55
1-0	-60

FLEXIBILITY

Basic Description: Robot gets yellow loops to Base.

PRECISE SCORING CONDITIONS

Yellow loops in Base: **20 EACH**

TRANSITIONS

Basic Description: Robot gets onto the center platform and is there when the match ends.

PRECISE SCORING CONDITIONS:

— Robot touching tilted center platform only: **45**

— OR —

— Robot touching balanced center platform only: **65**

For either case:

The center platform must not be touching anything but the mat and the robot.

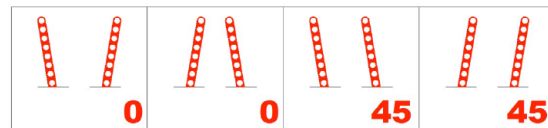
The center platform must remain between the stairs and the ramp.

SIMILARITY RECOGNITION AND COOPERATION

Basic Description: Robot aligns your pointer with the other team's pointer.

PRECISE SCORING CONDITIONS:

— Pointer on your field is parallel with pointer on other field (direction doesn't matter): **45**



BALL GAME “FUTURE EFFECTS OF OUR CURRENT DECISIONS”

Basic Description: Both teams get points for the total number of balls on the racks at the end of the match, but only one team gets points when their color is at the center.

SCORING CONDITIONS

Balls on the racks (all balls, center + sides, any color, added together): 10 EACH FOR BOTH TEAMS

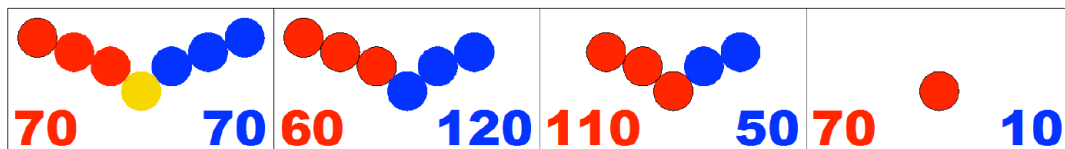
— ALSO —

Your color ball in the center position: 60 FOR YOUR TEAM ONLY

METHOD RESTRICTION:

— A push of the lever is the only allowable way for your robot to cause a ball of the other team’s color to fall.

— Only one ball of the other team’s color is allowed to fall for any push of the lever by your robot.



FACT: Referees note the current number of balls left at all times.

FACT: If the ball game model becomes jammed, broken, or drops any ball other than the center position, this will be known as a “glitch.”

If a glitch is caused by either of these reasons:

- o your robot pushes the lever on your side eastward, but too fast, too far, or not far enough...
- OR —
- o your robot interacts with the model in any other way than pushing the lever eastward the appropriate speed and distance...
- Both teams get credit for whatever balls were left on the rack before this happened.
- The other team (only) gets credit for center position (60).

If the referee determines that a glitch has occurred due to the model’s design, setup, or maintenance, both parts of the ball game mission are frozen and score as follows:

- o Both teams get credit for whatever balls were left on the rack before this happened.
- o Both teams get credit for center position (60).

TOUCH PENALTY – If you touch the robot while it’s outside Base, the referee clicks the cardiovascular exercise dial one click toward zero.

Appendix B

Dal News

Rockin' robots ready to rumble

First Lego League robot programming competition.

Katherine Wooler - January 31, 2013



The Oxford School Legos 'R' Us team: Mentor Chevy Phillips (back left) and coordinator Reynaldo Dames (far right) with team members Teanna Sparks, Isaiah Reade, and Ethan Smith (absent: team member Keyan Clayton). (Katherine Wooler photos)
Lego. Robots.

If you're trying to excite junior high students about science, math and engineering, those aren't bad words to start with.

More than 30 Lego robots from across the province will face off at the First Lego League robot programming competition this Saturday, February 2 at Acadia University. Two of these robots represent the product of Dal's work with the Imhotep Legacy Academy (ILA).

ILA brings together university students with African Nova Scotian youth in grades 7-9 to provide the youth with hands-on after-school programs that encourage success in science, math and engineering.

Dalhousie has been working with ILA since the program's inception in 1999. The Imhotep Legacy After-School Project (ILASP) is run through the cooperation of Dal's Faculty of Science, Department of Physics and Atmospheric Sciences and Black Student Advising Centre, along with

the African Canadian Services Division and the Office of African Nova Scotian Affairs.

This school year, in addition to offering after-school enrichment activities, ILA has been mentoring teams for the First Lego League competition in preparation for the upcoming competition.

Connecting with the next generation

Fourth-year Computer Science major Reynaldo Dames is the Lego League coordinator for ILA. Dames, who is also a Tiger Patrol and building attendant coordinator for Dal Security Services, helped run the first Lego League summer camp at Dalhousie last summer and plans to return for this year's camp.

"It is worth the time that you put into it," says Dames.

Agriculture grad student Ernest Korankye has been working with the ILASP for two-and-a-half years, teaching after-school math and science activities to ninth-graders at Truro Junior High School. This year, he has also been coaching a team of ten Truro Junior High students who will be taking their Lego robot to Acadia on Saturday.

"I hope to be a university professor," says Korankye, who works with the Faculty of Agriculture's Christmas Tree Research Centre, "but [ILA] is something that I would never throw away. I would always go back."

"I felt the agency to help because I am an African myself," adds Korankye. "Why not help your brothers and your sisters who are struggling in school?"

Assembling a support system

Halifax's Oxford School also has a Lego League team, called Legos 'R' Us, made up of four students from grades 7 to 9. Fourth-year Dal engineering student Chevy Phillips serves as the Halifax team mentor.



Earlier this week, ninth-grader Ethan Smith showed off some of the moves that the Legos 'R' Us robot (left) can pull off. The compact model

can cross a bridge, spin a windmill and maneuver through a miniature Lego world complete with a television, bowling alley and dog.

Smith says he joined the Lego League through ILA because he is interested in robotics and hopes to pursue similar courses in high school.

ILA aims to aid youth in social and academic development in the hope of correcting an under-representation of black professionals in scientific fields.

"[ILA] gives them the motivation to move forward and go to high school and university," explains Korankye. "Maybe they can look up to some of us."

Phillips, who plans to continue offering after-school robotics workshops following the competition, is happy to mentor the youth, and believes the Lego League has taught them teamwork and responsibility.

Dames agrees. "It's the joy of seeing the kids accomplish missions together," he says.

Building perseverance

The competition's theme is "senior solutions," requiring each team's robot to accomplish more than a dozen missions with tasks that a senior citizen living independently might have to complete — such as turning on a television — but done on a miniature scale.

While the teams have full control over their robot design, they will all be competing on a standardized course.

The Legos 'R' Us team has been practicing on a course assembled to match the one used in competition. So far, the team has found picking up and placing the Lego squares representing quilts to be the most difficult task.

"The programs are set, but we are working on placement," says Dames. "One little mistake and the whole thing falls through."

This need for precision, Dames says, is as good a lesson as any for youth who are thinking about a career in the sciences or similar fields.

"They have to keep trying and never give up when something fails," he says.

Appendix C

Kudos to the Imhotep Legacy Academy

Posted by Faculty of Science on 02/27/2013 in kudos

The Oxford Imhotep Legacy Academy team featured in Dal News won the Technical Award for the design of their robot over 31 other teams at the Lego League robot programming competition on February 2. As part of this win, they also took home the Mechanical Design Award from Michelin Tire which entitles them to a trip to the Michelin location of their choice in NS (they chose the New Glasgow location as it so happens that Ibimina Koko —the FLL Coach of this team from last year — is doing his Co-op placement there as a Dal Engineering student). The students will enjoy a tour and a luncheon on Michelin.

The Truro team also performed very well, receiving high scores during the robot missions.

Appendix D

Acadia University's Robot Programming Competitions Page

Winners of the 2012/13 Robot Programming Competition:

FIRST Lego League (FLL - ages 9 to 14):

- **FLL championship First Place** – iMOE Robotics from the Falcon Academy of Robotics
- **FLL championships second place** – FL2PS3 from Greenwood Robotics Club
- **Robot Performance Award 1st Place** – EPEC Phoenix from Eastern Passage Education Centre
- **Mechanical Design Award 1st Place** – LEGOS 'R' Us from Imhotep Legacy Academy
- **Programming Award 1st Place** – Robo Lobo Wired from Wolfville School
- **Strategy and Innovation Award 1st Place** – Les Jeunes Cougars from École Secondaire du Sommet
- **Project Presentation Award 1st Place** – ROBOmasters from Falcon Academy of Robotics
- **Project Innovative Solution Award 1st Place** – Robotic T-Rec from Riverside Education Centre
- **Project Research Award 1st Place** – Smarticle Particles from Evangeline Middle School
- **Core Values Teamwork Award 1st Place** – TMS Legomaniacs from Trenton Middle School
- **Core Values Inspiration Award 1st Place** – B.R.I.C.K.S. of Bedford from Falcon Academy of Robotics
- **Gracious Professionalism Award 1st Place** – KCA LEGO-My-Toes from Kings County Academy
- **Judges' Award (Rising Star)** – Sherlock Builders from Greenwood Robotics Club
- **Judges' Award (Against all odds)** – Spitting Llamas from Northeast Kings Education Centre

High School Robotics Competition:

- **Champion's Award** – Warriors 1 from Halifax West High School
- **Robot Performance – Ball Collection 1st Place** – Warriors 1 from Halifax West
- **Robot Performance – Speed Track 1st Place** – Warriors 2 from Halifax West
- **Robot Performance - Speed Track Best Single Run** - Mutated Machines from Horton High School
- **Robot Performance - Mystery Challenge 1st Place** – NKEC Ladies from Northeast Kings Educational Centre
- **Teamwork 1st Place** – Auburn Eagles from Auburn Drive High School
- **Robot Design 1st Place** – Underdogs from Horton High
- **Judges' Award** – RoboSaints from New Germany High School

Special certificates of Appreciation in FLL:

- **Adult Coach/Mentor** – Heather Travers and Maurice Rizcallah from the B.R.I.C.K.S. OF Bedford
- **Young Adult Coach/Mentor** – Alexandra Rousseau from FL2PS3

The Lynn Chipman Memorial Outstanding Volunteer awards:

- ***Sharla Rolfe-Hunter*** for her many years of cheerful work as an NSCC Qualifier coordinator, RPC FLL pit runner manager, FIRST World Festival volunteer.
- ***Dennis Langille*** for his many years of outstanding work as RPC recruiter, FLL Head technical Design Judge and overall RPC supporter

Outstanding Coach awards:

- ***Shelly Tulloch (FLL)*** – Bedford South Junior High
- ***Ted Champion (FLL/HRC)*** – Northeast Kings Education Centre

Appendix E

Acadia University's Robot Programming Competitions Page

March

2013

In March 2013, Michelin employees Dan Young and Dennis Langille hosted the LEGO 'R Us team for a tour of the CA1 Granton Michelin plant. The members of this Imhotep Legacy team were the winners of the Mechanical Design Award at the championship competition. In expressing his thanks, coach Reynaldo Dames noted that it was indeed a great opportunity for the kids to see just how a tire is made. He said "Both of you did an amazing job through the presentation and even encouraging the kids to get into science and math which will greatly come in handy for them in the future." Michelin has been a major financial and volunteer supporter of the competitions since 2006.

Appendix F.**8/15/13 Truro student recognized for love of science- Local – Truro Daily News**

www.trurodaily.com/News/Local/2013-05-14/article-3247719/Truro-student-recognized-for-love-of-science/1 1/1

Truro student recognized for love of science

Published on May 14, 2013

ANTIGONISH – A Grade 9 student was recognized with a scholarship over the weekend at the Imhotep’s Legacy Academy’s (ILA) ninth annual science, technology, engineering and mathematics (STEM) after-school program closing ceremonies. Topics : ILA-TD Opportunity , St. Francis Xavier University , Legacy Academy Haley Matthews was one of three students in the province to be awarded an ILA-TD Opportunity scholarship, valued up to \$5,000 per year. The scholarships were given to students who have shown a keen interest in STEM related fields and a high level of participation in ILA’s programs. The ceremony was held at St. Francis Xavier University.

Now in its 10th year, Imhotep’s Legacy Academy promotes the educational, social and personal development of young African Nova Scotian learners (Grades 7 to 12) by increasing their exposure to the world of science and promoting the skills fundamental to the appreciation for scientific inquiry

Appendix G



TD BANK OPPORTUNITY SCHOLARSHIP FOR IMHOTEP LEGACY ACADEMY GRADUATES

Purpose

The goal of the Imhotep's Legacy Academy (ILA) is to increase the number of African Nova Scotians pursuing post-secondary education in the fields of science, technology, engineering and mathematics (STEM). The ILA offers weekly interactive STEM enrichment activities and homework help for junior high students, an on-line tutoring program for high school students and summer research internships for post-secondary students. The ILA has partnered with TD Bank to create this four-year renewable scholarship for ILA program graduates entering Dalhousie University. Its purpose is to reduce the financial barrier for African Nova Scotian students pursuing studies in STEM related fields.

Eligibility

Any participant in the ILA's junior high or high school programs who demonstrate an interest and aptitude for STEM, and enrolls at Dalhousie in pursuit of a STEM related field, is eligible.

Scholarship Value

The total amount awarded upon entry to Dalhousie, will be determined, if selected in each of Grades 7 to 12, as shown in the table below.

Grade	7	8	9	10	11	12
Future Annual Award at Dalhousie	\$500	\$500	\$500	\$500	\$1000	\$2000

Scholarship Award

Each scholarship is valued at up to \$5000/yr. The total scholarship amount is awarded on registration at Dalhousie. Renewal is granted each year for up to three additional years, contingent on satisfactory academic performance in STEM related programs at Dalhousie. A minimum GPA of 2.7 is required for renewal. Each scholar will be matched with an accomplished STEM professional who will act as a mentor.

Selection procedure

Promising scholars are identified at an early stage in their participation in the ILA's programs. On a yearly basis, ILA staff recommends suitable candidates by asking them to complete an application process (including letters of reference, a school transcript showing grades of 70% or above in all courses, and a self-written essay). The applications are then forwarded to the ILA-TD Bank Opportunity Scholarship Selection Committee.

Recommended candidates will be informed of their selection and continued eligibility on a yearly basis. Selection is based on, but not limited to, a high level of participation in ILA's programs; demonstrated interest in STEM through participation in related activities or programs; and enrolment in grade 12 in a minimum of two of the following: academic, advanced or IB Biology, Physics, Chemistry and Mathematics courses. The scholarship is awarded in the first semester of study at Dalhousie, if the selected scholar remains eligible, applies to and is accepted at Dalhousie University, and enrolls in a first year suite of courses which leads to a STEM related program (e.g. BSc, BEng, BScN, BScKin, BScTR and others as described in the Dalhousie University calendar.)

Selection committee

The ILA-TD Bank Opportunity Scholarship Selection Committee is composed of members of the ILA's Board of Program Directors, and a representative from the Dalhousie administration (normally the Assistant Registrar, Scholarships and Awards.)

Information

For more information about these scholarships and how one can enrol in the ILA's programs please contact:

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