A Program on the Cutting Edge

Annual Report for the Academic Year 2006/07

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A Note from the Steering Committee

Dear Stakeholders,

The 2006-07 incarnation of the Imhotep's Legacy After-School Project was marked by expansion of the program to Truro Junior High School, joining our already established duo of Halifax schools – St. Patrick's Alexandra and Caledonia Junior High. Expansion to a site outside the Halifax Regional Municipality brought challenges in co-ordination and oversight and offered a test bed for future expansion to other sites in the province such as Sydney and the Annapolis Valley.

Over forty five students "graduated" this year from our program, during a very moving closing ceremony marked by a poetic tribute to project mentors from one the participants entitled "Before I knew you." This event was also marked by the presence of the Lieutenant Governor of Nova Scotia, Her Honor Mayann E. Francis, ONS, serving to highlight the importance of the program to the Nova Scotia community.

During the course of the academic year young learners engaged in a number of enrichment activities including learning how to make a battery, making a motor, how plant cells work, how light works, building a periscope, exploring the building blocks of life - DNA, making holograms, constructing a steam boat, and the list goes on…

Of course, were it not for generous funding provided by our sponsors we could not have the resources needed to deliver a program of this size and scope. We sincerely thank Dr. Patrick Kakembo at the Nova Scotia Department of Education – African Canadian Services Division; Dalhousie University – Faculty of Science (Dr. Keith Taylor who is a strong supporter of outreach activities such as this), Drs. Harm Rotermund & Gerhard Stroink at the Department of Physics and Atmospheric Science, Barb Hamilton-Hinch at the Black Student Advising Centre; Delvina Bernard at the Council on African Canadian Education; and, Wayn Hamilton at the Nova Scotia Department of African Nova Scotian Affairs.

As we look to expand the program to other sites in the province we plan to pursue additional funding from federal sources like the NSERC PromoScience program.

Our program is truly a university-community partnership - bringing together the wealth of talent needed to create an interesting and informative exploration of scientific principles. We also plan to track our participants through the completion of high school and we hope post-secondary education careers to determine whether the program has the desired effect on their interest and aptitude in science.

We are outgrowing our space at the Black Student Advising Centre, where our bins have taken over the office, corridors, and lounges. We need to identify a permanent space on the Dalhousie campus and efforts are underway to procure space in a house on campus for this purpose.

Without the time and effort of a number of people the program would not meet with success. The steering committee, our staff and supporters all view this program as a labor of love, because the time that each of us commits to realizing the goals of this program is done in the hope of activating an interest in the minds of the students to the wonders of science. We're doing a small part in the larger context of the education our public schools provide. Our enrichment program aims to connect science to the everyday experience of our learners.

We celebrate the critical contribution of our school administrators who mobilized the students and parents for participation in the program. Their input is paramount in selecting students for the program and we thank them for their efforts: Vice Principal Noreen Stymest (Caledonia Junior High), Principal Ken Fells (St. Patrick's-Alexandra) and Vice Principal Denis Bruce (Truro Junior High).

Our fifth year is also marked by the generous contribution of ten scholarships from SuperNova for their summer 2007 science camp program. These will provide an opportunity for our learners to continue science exploration beyond the school year.

We would like to recognize the time and effort that our participants have put into the program – in some cases attending ILASP sessions in lieu of other afterschool activities. You may or may not recognize it now, but it is these wise choices that create the foundation for a bright future. As your mentors have no doubt mentioned, no matter the goal, hard work is required to achieve. Work hard and work smart. You are all blazing a trail to be proud of. Congratulations again and we look forward to seeing the grade 7 and 8 students in the coming year. To our grade 9 graduates, we hope we've given you some insight into how science applies to many career choices. We urge you to continue your education in science, and if not, we hope you continue your education to the post-secondary level and keep in touch with us.

Thank you,

ILASP Steering Committee:

Margo Hampden Dr. Kevin Hewitt

Barb Hamilton-Hinch Wayn Hamilton

Benefits of High Quality After-School Programs: The Value of ILASP

It is widely noted that the profound educational disadvantage and lack of participation of African Canadian learners in tertiary level Math and Science academic programs stems from a wider societal and economic disadvantage. Studies consistently find complex cultural, social, economic and institutional issues influencing this alarming under-representation in the science arena. Of prime importance is the issue of the apparent lack of relevance of Math and Science curricula to learners' everyday lives. In addition, young African Canadian learners report no mentors, no role models, no idea of future careers, and no perceived positive outcomes for their communities in the study of Math and Science.

The after-school environment cultivated by ILASP mentors offers learners a safe environment to actively participate in hands-on learning activities that reinforces the Math and Science education received during regular school instruction. However, compared to the school day, after-school program participants are exposed to smaller group sizes, longer time slots of one-on-one tutoring, a conducive and nurturing studying environment, opportunities to visit science facilities in the community, acquaint themselves with the university environment, and perform fun science experiments using common household equipment. In addition, participants work in groups to encourage positive and constructive peer relationships.

Consider the fact that three out of four Nobel Prize laureates in science claim to have first cultivated their passion for science outside their regular class environment. This echoes the sentiment that a well-designed, high quality after-school program can have far-reaching effects on the ability of young learners to unlock their true potential in Math and Science.

Moreover, research consistently shows a positive correlation for young learners between the time spent on educational tasks and academic achievement. Hence, a program that offers learners a chance to extend their learning experience will engender a better performance in regular coursework. These students will show more engagement with their studies, be more willing to ask for assistance as well as provide assistance to peers. By nurturing better-behaved participants who show more positive interactions with peers and school staff, the after-school environment enhances in-school productivity for all. The ultimate result is a higher graduation rate among participants of after-school program compared to non-participants.

Through project-based and experiential learning Imhotep's Legacy provides ideal after-school environments for young learners to engage in scientific inquiry, teambuilding, critical thinking, problem solving and to make real world connections between the theoretical and the observed.

Creating Effective Programs: The Core Elements of ILASP

The successful implementation of ILASP's initiatives on an annual basis is due in large part to the consistency in the elements that constitute the framework of its programs. The following core elements are critical to quality:

- Imhotep's Legacy After-School Project remains a not-for-profit university-based organization that partners with individual public schools in Nova Scotia to negotiate the details of their after-school program partnership.
- A year-round program coordinator for strong, successful leadership. The coordinator designs and implements programs, supervises staff and cooperates closely with other stakeholders.
- Participants receive individualized attention from a staff comprised of university students of African descent.
- A strong focus on educational enrichment and homework help. Field trips and other off-site events are organized to expose learners to a broad range of subjects and disciplines beyond their usual experience.
- Each program is designed to complement the regular school curriculum and to support the benchmarks established by the Nova Scotia Department of Education.
- Every junior high student of African descent enrolled in the target schools is eligible for enrollment. We strive to create a supportive and welcoming environment to facilitate learning.
- Regular attendance is required to ensure continuity and enhance the quality of delivery of program activities.

After-School Goes Outdoors

☑ ATTENDANCE & PARTICIPATION

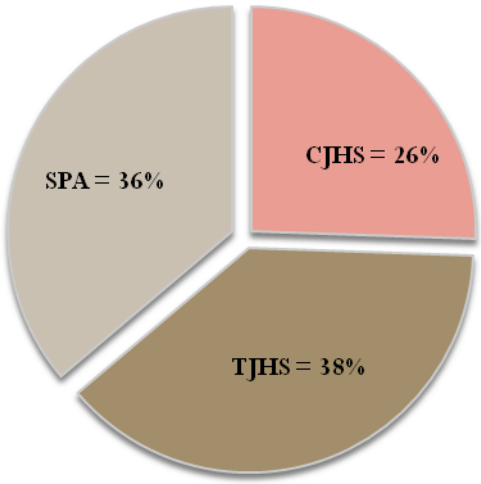
ILASP met its goal of expanding its service area to other regions in Nova Scotia. Whereas the initiative was successfully implemented last academic year at two target sites in the Halifax Regional Municipality, the current initiative was implemented also implemented in the Municipality of the County of Colchester.

The three schools that hosted ILASP this academic year were Caledonia Junior High School (CJHS), St. Patrick's-Alexandra School (SPA), and Truro Junior High School (TJHS). These schools serve a large number of African Nova Scotian learners who demonstrated an interest in science and a willingness to participate in after-school activities designed to improve their academic performance.

During the academic year 2006/07 ILASP successfully enrolled forty-seven (47) students from three target sites. This number is reflexive of twelve (12) students from CJHS, seventeen (17) students from SPA, and eighteen (18) students from TJHS (see Figure 1). Overall, this reflects an increase of 56% from the last academic year (2005/06).

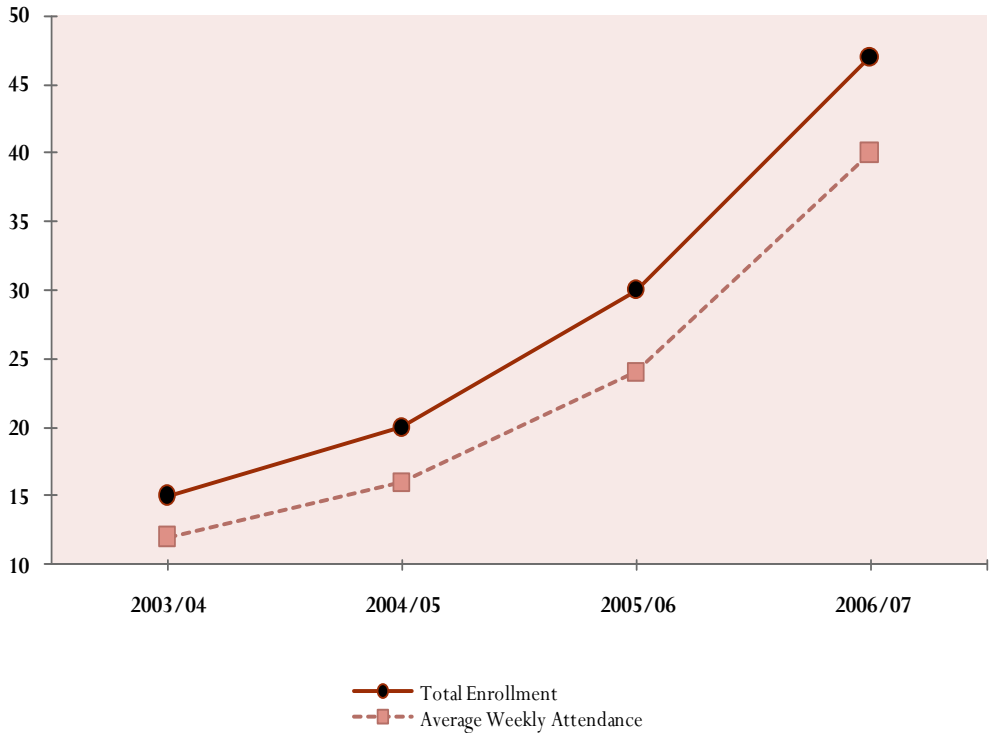
The successful recruitment at both sites is attributable to a number of factors. School administrators were pro-active in their commitment to ensuring their students benefit significantly from the project. They identified prospective candidates for recruitment based on the student's academic aptitude and attitude. Additionally, the administration contacted parents/guardians to promote project activities. The administration remained immensely supportive of the program throughout the year.

Figure 1: Percentage Enrollment per Target Site for 2006/07



There has been a steady increase in the number of students enrolled in the program over the last four years. This is directly attributable to the increase in number of target schools as well as heightened interest amongst young learners to benefit from the opportunities ILASP provides.

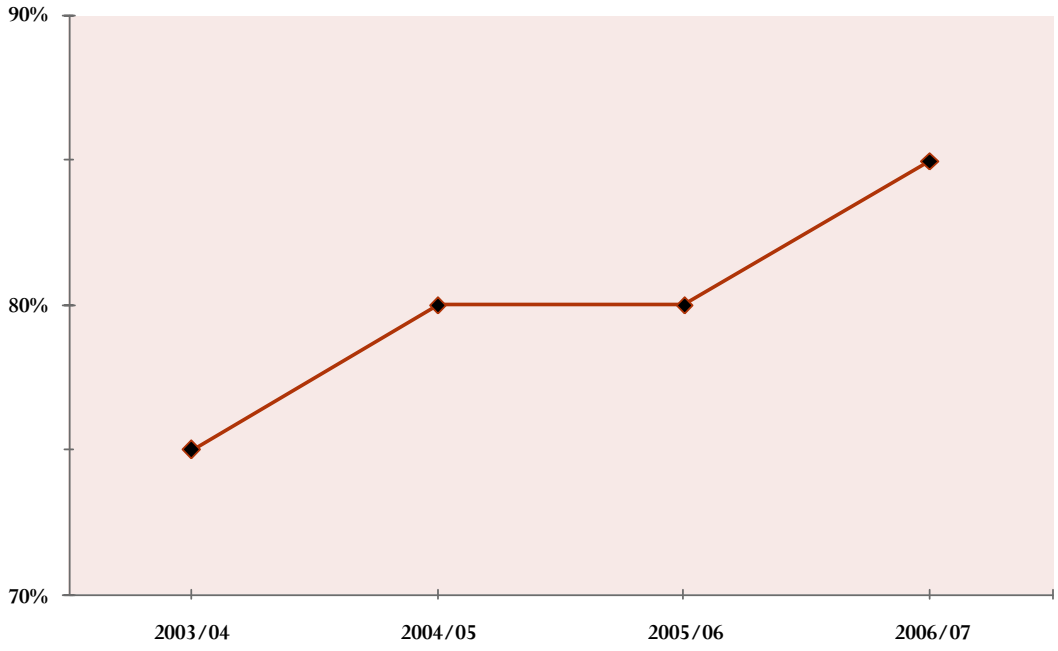
Figure 2: Annual Enrollment versus Attendance Frequency



Attendance records show conclusively that once again ILASP successfully attained its service goal in 2006/07. The Average Weekly Attendance is used by after-school programs to as a quality control measure to assess their ability to reach service target. Since ILASP is a weekly program, the Average Weekly Attendance (AWA) is a more accurate measure of program quality. AWA is defined as the number of participants in all target sites that attend after-school on a given week. ILASP's 2006/07 AWA values reveal that the program has met its objectives vis-à-vis its scope of service delivery (see Figure 2). On average, 40 of the 47 students enrolled in the program, attended the weekly sessions. Moreover, over time the program has successfully matched an increase in its annual enrollment with an increase in attendance.

Overall, the ILASP model was successful in maintaining a high participation rate despite the increase in total enrollment. Since, ILASP activities are hand-on and participatory, the general level of participation can be inferred from the Average Attendance Rate (AAR). Because young learners are unable to attend every session as a result their participation in sports and other extracurricular activities, after-school program quality can also be measured by the number of "active" participants versus the number of "engaged" participants. Reputable research institutions such as the Public Service Agency define an "active" participant as one with and AAR of 60%, and an "engaged" participant as one who attends a minimum of 80% of program sessions. Accordingly, ILASP has successfully attracted "engaged" participants over time, with the highest level of participant engagement (85%) observed in 2006/07(see Figure 3).

Figure 3: Average Attendance Rate per Year



☑ PROGRAMMING

During the 2006/07 academic year, ILASP participants were exposed to an attractive array of activities and opportunities to develop their academic aptitude and personal development. The following practices that have been shown to be successful in past years were maintained for 2006/07:

- Learners explored different methods of solving science and math questions.
- Learners were encouraged to be less dependent on mentors for input, and be more confident in their ability to solve science and math problems.
- An informal atmosphere was maintained to allow for a non-threatening, enjoyable learning environment.
- Learners were encouraged to ask questions and shown how to use other resources (such as the library and the internet) to access relevant information.
- Learners were encouraged to be engaged participants in activities that required group work.
- Activities allowed learners to have hands-on practical experience in conducting science experiments. Participants were also provided the opportunity to take materials home and replicate the experiments at their leisure.
- Participants were exposed to the science environment in a University setting and allowed access to equipment and materials that were not available at their schools.
- To address the problem of relevance, some activities were designed to mirror popular TV programs such as the CSI-Crimes Scene Investigation series.

In all, there were twenty-seven (27) weekly activities developed (9 per grade level), two (2) science enrichment workshops, and four (4) field trips. The field trips offered the participants great opportunities to visit science institutions in the community, such as the Radiology Oncology Unit at the QEII Health Centre and the Bedford Institute of Oceanography.

VARIAN LINEAR ACCELERATOR USED IN THE TREATMENT OF CANCER

CT-SIMULATOR USED AS PART OF THE TREATMENT REGIME IN RADIOLOGY

☑ STAFFING & TRAINING

Qualified mentors were hired using both formal and informal employment networks from a pool of University students of African descent. The selection criteria included commitment to hardwork, previous mentoring experience, and understanding of Afrocentric issues related to accessing educational opportunities at the tertiary level. Additionally, most mentors had previous relevant experience in mentoring/tutoring, community organizations and youth services. These standards were consistent with the recruitment strategy adopted in previous years.

Mentors' competence in core academic areas was taken into consideration as an imperative indicator of program quality. Hence, the minimum requirement was a tertiary level academic background in Science and/or Engineering. Resultant of these standards eight (8) mentors and one (2) project coordinators were hired to facilitate service delivery in Truro and Halifax.

Given that trained mentors are more effective in program delivery, ongoing staff professional development was fundamental to the successful implementation of the program. After assessing the professional development needs of the staff, training was provided according to a predetermined schedule to cultivate skills such as using icebreakers, setting up ground rules, encouraging imagination and creativity, and monitoring group dynamics.

Given the relative inexperience in teaching competencies, three experienced members of the Dalhousie University Faculty were charged with working with the staff during training and activity development. Also, a trained junior high school teacher was invited to conduct a session on classroom management.

The team of mentors and coordinators was under the auspices of four steering committee members with strong ties to the African Nova Scotian community and a common belief in African Canadian youth and their capacity to achieve academically and socially.

MEMBERS OF THE ILASP TEAM

☑ STAKEHOLDER RELATIONSHIPS

School administrators maintained a consistently positive view of the relationship between with ILASP and particularly impressed by the consistency of program start times as well as the timely and the timely coordination and integration of off-site activities with the school. They were also eager to convey their assessment of the relevance of the after-school learning initiative to their students' school-day curricula. They believed that the project activities and school themes were appropriately coordinated. Essential ingredients of the successful partnership with all three target sites include:

- mutual appreciation of the value of the program for participants;
- flexibility among school staff vis-à-vis planning and scheduling of events;
- mutual respect and between the project coordinator and school authorities;
- aligning expectations for program participants with the school's expectations;
- appointing a teacher liaison to enhance communication between project staff and the school;
- sharing the school's communication strategy to connect to participants' families.

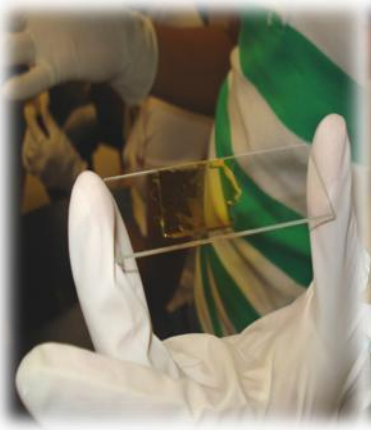
Once again, mentors encouraged intentional relationship building with program participants. Each year, the successful delivery of ILAPS programs pivots heavily on the development of such informal, healthy relationships. Project staff judged this relationship by the degree to which young learners interacted like "one family" in the tasks and during informal interactions; in their respect for one another, and in their willingness to extend the relationship beyond the school environment. Project staff organized birthday parties, sports and movie outings, attended some participants other extracurricular engagements, and even organized trips to science institutions in the community for individual participants.

Given than parents generally cannot afford adequate discretionary time to be actively involved in program planning and decision-making, ILASP ensured that all parents/guardians received information about the program's mission, didactic philosophy, and policies. Parents were also invited to the closing ceremony and some heeded the invitation. However, the relationship between the after-school program and participants' parents still remains a unique challenge. Project strategies to build parental awareness and support did not yield the desired results. Encouragingly, some target sites showed more promise in this area. Notwithstanding, there needs to be a marked improvement in this area and strategies to improve parental involvement should be a major focus of the strategic planning for 2007/08.

ILASP in Action: Pictures from 2006/07

A St. Patrick's-Alexandra student handles a crab on a field trip

☑ TRURO JUNIOR HIGH SCHOOL



Top Left: Grade 9 participants display the product of the Forever Flashlight activity. Also called the Shaking Flashlight because of the manner in which it is activated, this product does not rely on an expendable source of energy.

Top Right: Making a hydrometer and using it to measure the density of water, olive oil, and glycerol.

Bottom: Investigating plasmolysis or the destruction of plant cells when put in a saline environment. Slides were prepared of onion cells before and after the addition of a saline solution and the behaviour of the vacuoles and cell walls observed using a light

☑ ST. PATRICK'S-ALEXANDRA SCHOOL

Top Right: Investigating the result of mixing two or three primary colours together using acrylic paint and using coloured light bulbs. To obtain best results the light bulb activity was conducted in a dark room and red light was obtained for the mixture of lights shown here.

Bottom: DNA Extraction was the topic of the day for the Grade 7 Class. To facilitate participants' understanding, a double helix model was prepared to teach the participants about the structure of DNA. Also, participants were shown how to use coloured beads to create necklaces, bracelet and even earrings that spelled their individual names much in the same way that codons spell out the genetic code.

☑ CALEDONIA JUNIOR HIGH SCHOOL

Top: After-school sessions at CJHS are always conducted in a fun environment, such as this game of Math Twister used to as an icebreaker before a homework help session.

Far Left: A Grade 8 student sets up equipment for an activity designed to teach the concepts of electrolysis and metal plating.

Left: A Grade 7 student drops an object on the bull's eye from an elevated position.

☑ DALHOUSIE SCIENCE ENRICHMENT WORKSHOP

Top Right: Saturday Science Enrichment Workshops held at Dalhousie University usually begin with an icebreaker. Here a Steering Committee member leads participants through a game of Musical Chairs.

Bottom Left: A Teacher from St. Pat's-Alexandra assists a Grade 7 participant from her school with the assembly of a simple radio.

Bottom Right: A Grade 7 student from Caledonia Junior High takes part in an activity designed to create musical notes using wine glasses filled with water. Participants worked with their peers from other schools using wine glasses to creating the musical notes of some popular nursery rhymes. The notes created with the wine glasses were measured in Hertz and team with the most accurate notes earned a handsome reward.

☑ FIELD TRIP: CANADA-WIDE SCIENCE FAIR

The National Science Fair was held this year in Truro, providing an opportunity for TJHS participants to learn about some cool science activities from 500 of their peers from across the country.

Top: A Grade 8 Science Fair participant from Newfoundland explains to ILASP students how she conducted an experiment to test the amount of fat in ground beef and moose meat.

Left: A Grade 9 student from Ontario explains how she tested the Omega-3 levels in different types of cooking oils versus fish oil to determine why fast food restaurants should start using a mixture of fish oil in their meals.

☑ FIELD TRIP: BEDFORD INSTITUTE OF OCEANOGRAPHY

CHECKING OUT A REPLICA OF A COAST GUARD VESSEL

A CHART CONTAINING THE OCEAN SPECIES ENDEMIC TO THE SABLE ISLAND GULLY

Left: From a Fish's Perspective – An aquarium designed to allow visitors to the BIO view the world from the perspective of sea animals. BIO also offers opportunities to see a replica of the Titanic as well as pictures of the actual wreckage as it is today. However, the biggest hit for ILASP participants was the Sea Pavilion (next page), where they got the chance to handle live sea creatures in a touch tank.

WHO DARE'S GO FIRST?

I AM THE BRAVE ONE!

SO AM I, AT LEAST I THINK I AM!!!

☑ PARENT/STUDENT INFORMATION SESSION & MAGIC SHOW

THE BURNING BILL TRICK USING A MIXTURE OF WATER AND ETHANOL

WOWING THE AUDIENCE WITH LIQUID NITROGEN

USING SODIUM POLYACRYLATE TO DEMONSTRATE HOW DIAPERS WORK

The Magic Show (above) was conceived as a means by which to improve attendance at information sessions held at the beginning of the school year.

The sessions target potential participants and their parents and inform them about ILASP initiatives and encourage enrollment. This year we took the magic show on the road to the Truro Junior High community (left).

☑ CLOSING CEREMONY

ILASP held its end of year gala on June 7, 2007 in Halifax, Nova Scotia. Gracing this event was The Honourable Mayann E. Francis, O.N.S., Lieutenant Governor of Nova Scotia (seen here presenting a certificate of participation to an ILASP participant.

A closing ceremony is held each academic year to offer program sponsors the opportunity to meet the participants and learn about the nature of their after-school experience.

Lasting Memories: Program staff and participants pose for a picture at the end of the closing ceremony. Two of the students seen here were graduating following three years with the program. Two other students here were celebrating their second year with the program.

Modest Investment, Great Returns: Key Accomplishments in 2006/07

There is no more cost-effective way to invest in improving students learning outside the classroom than via after-school programs. Economists estimate that every dollar invested in after-school yield a minimum return of three dollars in public benefits, notwithstanding the unquantifiable benefits to society that an investment in after-school programs could yield.

A cost-benefit analysis of ILAPS reveal the cost of running the program each year is less than $900 per participant. This includes staff training, administration, activity materials, transportation, etc. This cost is much lower than the cost of running other after-school programs that target a similar demographic.

In purely economic terms, Imhotep's Legacy After-School Project makes sense!!!

KEY ACCOMPLSHMENTS:

- The expansion of ILASP's service area to include Truro Junior High was a resounding success as confirmed by quality indicators as well as stakeholder perspectives.
- ILASP continues to effectively attract and retain young African Nova Scotian learners at all three target.
- The attractiveness of the ILASP model engendered an average attendance rate of 85%, higher the national standard for a high quality after-school programs.
- Participants evince a strong confidence in their ability to pursue science and math beyond high school.
- School administrators overwhelmingly believe ILASP is helping support meaningful improvements in learners' academic attitude and aptitude, as well as their personal development.
- A superior staff training strategy yields a well-qualified staff that is able to adapt to meet the needs of learners, while maintaining the core elements of the ILASP model.
- A critical mass of 27 science enrichment activities were developed and delivered during weekly sessions, in addition to the science enrichment workshops and field trips.
- The mentor-participant ratio was maintained at 1:5 to enable adequate one-on-one interaction.
- Parents expressed satisfaction with ILASP programs citing their children's enjoyment of their after-school experience, their children's completion of homework before arriving home

Better Investment, Greater Returns: A Vision for the Future

The overriding conclusion stemming from the evaluation of ILASP's programs in 2006/07 is that this after-school initiative is a sustainable product. Whereas ILASP activities continued to engender positive results irrespective of the program's limited resources, a greater investment in future programs should engender even better results and provide the means to carry out the following exercises:

- Establish an effective strategy to publicize the program, its achievement, and the success of its participants within the target schools and beyond.
- Navigating community resource networks to promote support for the program and enable the expansion of its services to more young learners
- Engaging more stakeholders, especially participants' families in long-term planning and decision-making.
- Actively seek the contribution of advocates for the increased availability of high-quality after-school initiatives such as local educators, church leaders, and elected officials.
- Expand staff training to include child development, experiential learning, first-aid and child-abuse reporting.
- Invite external evaluation as well as develop a standard internal evaluation tool to ensure quality control.
- Develop a tracking strategy to monitor participants' progress beyond junior high school and lay the foundation for a well-structured longitudinal evaluation of program outcomes.
- Conduct research on other best practices to adopt, hence ensuring program growth and sustainability.

With more resources, ILASP propensity to maximize its resources while maintaining high quality programs will enable more young African Canadian learners benefit from an effective after-school experience. The ball is in play…

A Program on the Cutting Edge

Annual Report for the Academic Year 2006/07

CALEDONIA JUNIOR HIGH STUDENTS HAVING A SNACK WITH THEIR MENTORS PRIOR TO AN AFTER-SCHOOL SESSION