

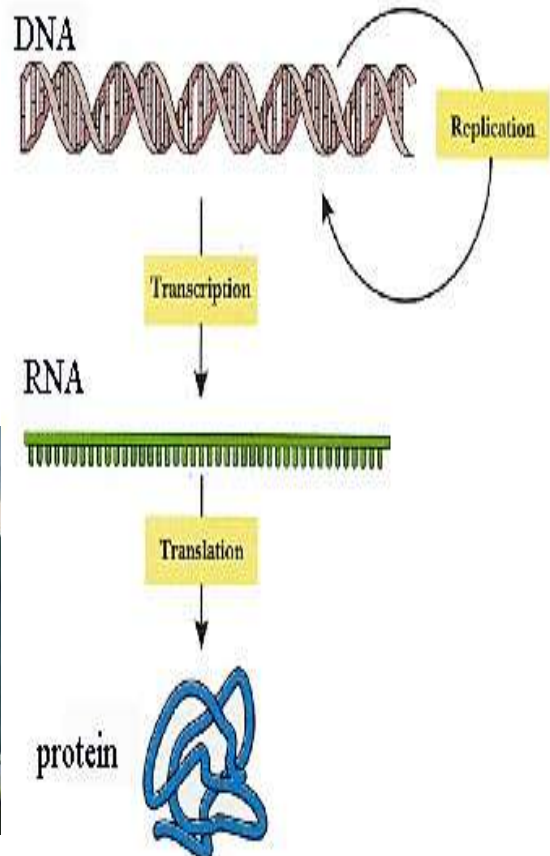
Introduction

[Core Elements of an Imhotep's Legacy Program](#)

# Imhotep's

## PROJECT IV REPORT

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# IMHOTEP'S LEGACY AT FOUR YEARS

## WHAT IS IMHOTEP'S LEGACY?

**Imhotep's Legacy** is a university-community, after-school project lead by the Department of Physics in conjunction with the Black Student Advising Centre at Dalhousie University, and the African Canadian Services Division - a unit of the Nova Scotia Department of Education. The project uses practices known to promote the educational, social, and personal development of young learners (Grades 7, 8 & 9) of African descent.

**Our objective** is to provide an opportunity for junior high learners of African descent to engage in activities designed to strengthen their math and science aptitude. We seek to redress some of the issues preventing learners of African descent from developing a better appreciation for scientific inquiry with a vision to improve on the representation of African Canadian professionals in the various fields of science.

**Our believe** is that young learners will attend an after-school program regularly if it features high-quality, comprehensive components that are distinct from but connected to the regular school. Regular participation will enable young learners improve their academic skills and knowledge.

**Our approach** involves engaging students from Dalhousie University in the design and implementation of science enrichment activities for young learners. Through a high degree of participatory and informal interaction the university mentors deconstruct concepts and dispel some of the myths about science in a casual and convivial atmosphere.

*Imhotep's Legacy was established to address the complex and very cotemporary challenge of increasing the participation and contribution of African Canadian learners in university Science and Math.*

*It is widely noted that the profound educational disadvantage and lack of participation of students of African descent in undergraduate science and math stems from a wider societal and economic disadvantage. Studies have found complex cultural, social, economic and institutional issues influencing under-representation. Of prime importance is the issue of the apparent lack of relevance of Science and Math curricula to the lives of African Canadian learners. In addition, students report no mentors, no role models, no idea of future careers, nor perceived positive outcomes for their communities in the study of Science and Math.*

*This brief is a review of the current initiative at Dalhousie University to directly address the factors in African Canadian under-representation in Science and Math. Included is an examination of the quality of Imhotep's Legacy services, the benefits gained by participants, and the practices that lead to positive outcomes.*



## Core Elements of an Imhotep's Legacy Project



While the current initiative (Project IV) was preceded by three other programs, certain core elements remain constant in each project. These requirements form a practical, effective framework that can be replicated each year.

- ❖ Imhotep's Legacy remains a not-for-profit university-based organization that teams up with individual public schools in the Halifax Regional Municipality 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.
- ❖ 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 Department of Education.
- ❖ Every junior high student of African descent enrolled in the target schools is eligible for enrollment. Our goal is to create a supportive and welcoming environment to facilitate learning.
- ❖ Regular attendance is required to ensure continuity and enhance quality of delivery.



## Evaluating Key Outcomes

Information collected for the purposes of project evaluation utilized the methods outlined below:

- ❖ Interviews with key stakeholders – students, mentors, school administrators, teachers and parents/guardians.
- ❖ Participant observation - allowed the coordinator to gather information about the project from the point of view of a participant thereby capturing the nuances of the delivery process first hand.
- ❖ Event logs including information on the 5 W's: when the session took place; why it was important; what was the result; who was involved; what support was provided for the session by the school and community.
- ❖ Questionnaires designed to rate participant satisfaction.

### A. Quality of Program Services

Imhotep's Legacy Project IV effectively addressed the following five elements of high-quality services:

- ❖ Recruitment of participants
- ❖ Enrollment and attendance record
- ❖ Staffing quality and training
- ❖ Programming
- ❖ Stakeholder relationships

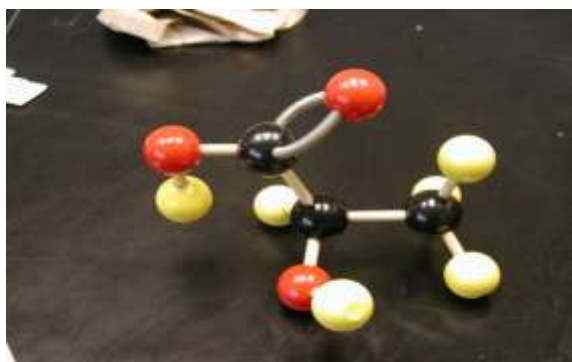


### RECRUITMENT OF PARTICIPANTS

The project successfully recruited students from Caledonia Junior High and St. Patrick's-Alexandra School. The majority of participants were born in Canada, while some were relatively new immigrants.

The two schools that hosted Imhotep's Legacy Project IV serve a large number of learners of African descent. They also have students with relatively lower achievement in Science and Math (at least, in the junior high grades).

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.



## ENROLLMENT AND ATTENDANCE

The project successfully enrolled twenty (20) students from both sites. This number is reflexive of fifteen (15) students from Caledonia Junior High and five (5) students from St. Patrick's-Alexandra School. Overall, this reflects an increase of 33% between Project III and Project IV.

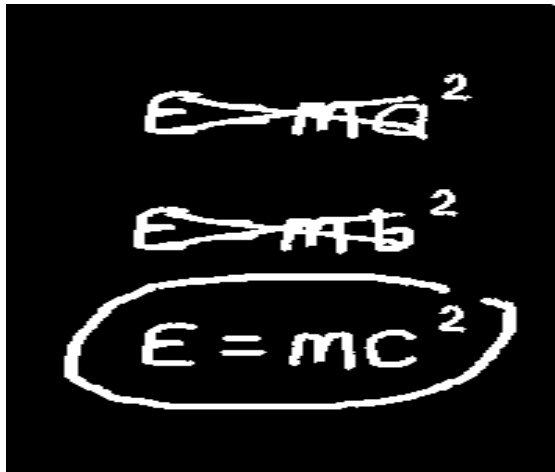
The receipt of a signed Student Agreement form and Family/Parent Agreement form qualified enrollment. Both forms explicitly outlined the roles and responsibilities of young learners and their parents/guardians vis-à-vis the after-school initiative.

A sizeable portion of the students from Caledonia Junior High had participated last year in Project III. This pattern of re-enrollment suggests that the Imhotep's Legacy model appeals to students and parents alike.

Attendance records show conclusively that a significant portion of students enrolled in Project were "engaged" participants. Because some young learners were unable to attend every session as a result of their participation in sports and other extracurricular activities, "engaged" students were those that attended at least 75% of the sessions or an average of three sessions per month.

For all young learners in the project, including those who attended less frequently, the median attendance rate increased from 70% for Project III to 82% for Project IV. This pattern was also reflected in the dropout rate. A salient feature of this year's project, combined with the higher retention rate, was the number of students (74%) who attended every session through June 2005.





### STAFFING AND TRAINING

Imhotep's Legacy projects enlist the services of qualified mentors to assist the young learners grow academically, socially, and personally. Appropriately, mentors' own schooling, professional development, and supervision are imperative determinants of project quality.

The mentors were hired from a pool of respondents to ads posted by the Dalhousie University Black Student Advisor on the Student Employment Centre jobsite. A combination of criteria was employed in mentor selection: all mentors were registered students at Dalhousie University; had or were pursuing a bachelor's degree; and, were of African descent and could identify with wider societal issues influencing African Canadian learners' mediocre attitude vis-à-vis the pursuit of tertiary level education in science and math. Additionally, most mentors had previous relevant experience in mentoring/tutoring, community organizations and youth services.

Resultant of the above recruitment standards eight (8) mentors and one (1) project coordinator were hired to facilitate service delivery.

The training and assistance provided to the mentors was fundamental in improving the quality of this initiative. Research findings expound that trained mentors are more effective engaging participants than untrained staff. Mentor training dwelt on core responsibilities, including building group cohesion, managing classrooms, and leading learning activities. .

In order to maintain the high quality of activities delivered in Project III, mentors were required to create written lesson plans for all project activities. The effectiveness of these activity plans was assessed through simulated tutorials supervised by an experienced university professor.

All mentors implemented the ideas and strategies developed in training and reported that they improved project quality, hence, suggesting that the quality of training and assistance available to mentors is of commendable standards.

Mentors overwhelmingly reported being satisfied with their duties, signifying they would have a greater propensity to foster a conducive and convivial learning environment.



## STAKEHOLDER RELATIONSHIPS

The school administrators at both target sites consistently report a strong relationship between their respective schools and Imhotep's Legacy projects. The principals designate a school staff member to act as a site coordinator. The site coordinator is responsible for facilitating the delivery of project activities by managing students, contacting parents/guardians, monitor site activities, and resolving logistical issues.

Typically, the project enjoyed adequate access to school spaces and facilities.

School administrators and teachers were 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 coordinated. School administrators sometimes requested that particular themes be incorporated into the project activities. As well, they recommended that certain types of assistance (e.g., Math/Science test prep) would be more appropriate at specific times in the school year in lieu of regular project activities.

Although school administrators maintained a consistently positive view of the relationship between their school and Imhotep's Legacy, some concerns were raised at both sites: the consistency of program start times (reflecting a preference for mentors to be on-site well before the end of the school-day); and the timely coordination and integration of off-site activities with the school.

The relationship between the after-school initiative and the parents/guardians of participants remains a unique challenge. Project strategies to build parental awareness and support did not yield

adequate results. Parents/guardians remain largely disconnected from their roles and responsibilities as outlined in the Parent/Guardian Agreement. The site coordinator at Caledonia Junior High was able to organize a meeting with some parents/guardians during the student recruitment phase. This was a positive step in building a better relationship. However, the fact that school administrators act as an intermediary between the project and the parents/guardians concerned may not be the best form of outreach. Direct communication between Imhotep's Legacy staff and parents/guardians may yield a better outcome.







## PROGRAMMING

Project activities were designed to develop learners' academic and cognitive skills as well as cultural awareness. These activities included homework help, science experiments and games.

The activities that constantly attracted the most participation were those that provided valuable opportunities that differ from those offered in school:

- ❖ 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 gain access to 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 project 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.

## B. Benefits of Project Participation – Stakeholder Perceptions

Imhotep's Legacy participants experienced growth in personal skills, educational performance, school attendance, and perception of their ability to pursue tertiary level science and math education.

A scientifically conclusive result could not be obtained about the effect of the project due to problems in measurement, sample size, access to provincial test score, and comparability. Also, there were differences in gender, family income, social support, and special education status between participants and non-participants. These uncontrolled variables preclude any scientific conclusion on the benefits of the project.

However, the perceived benefits could be assessed from feedback received from stakeholders - students, teachers, school administrators, and parents/guardians.



All the junior high learners who participated in the project reported that they were satisfied with their involvement. Many of the learners (92%) felt that the project would have an impact on their decision to pursue tertiary level education. Asked at the end of the project about their career aspirations, most students (88%) reported science-related careers like medicine, nursing, engineering, physics, and zoology.

Most of the learners (72%) felt that program exposed them to important new places, ideas, and activities, and gave them a good chance to build and master relevant skills.





Even more (84%) commented that the project had led them to approach their school-day science and math classes with more enthusiasm. Such high level of self-esteem has been reported to be an important factor in later success in tertiary level science and math education.

When asked what they especially liked about the project, learners mentioned participating in activities that differed from their regular schoolwork, completing their homework before arriving home, and learning in an informal environment with their friends.

Learners felt connected to the after-school project. Many participants commented that the project fostered in them a sense of belonging. They reported that their ideas mattered, they were engaged participants, and they felt successful in the project environment.

In addition to the positive social interactions they experienced, learners overwhelmingly said they liked, trusted, and respected their mentors and viewed them as positive role models. They also felt that the mentors were effective in facilitating their learning.

Teachers and school administrators perceived that Imhotep's Legacy had a positive ripple effect on the entire academic and non-academic educational experience of the learners. The teachers were satisfied that the project was well coordinated to the participants' school curricula.

Academically, teachers and school administrators credited the project with: encouraging self-learning; assisting in honing learners' science and math skills; exposing students to activities not available during the regular school day; and developing core skills that were applicable in learners' schoolwork.

The non-academic benefits reported included: improvements in learners' attitudes toward learning; boosting learners' self-esteem; improving school attendance; and boosting learners' motivation to be engaged participants in all other classes.

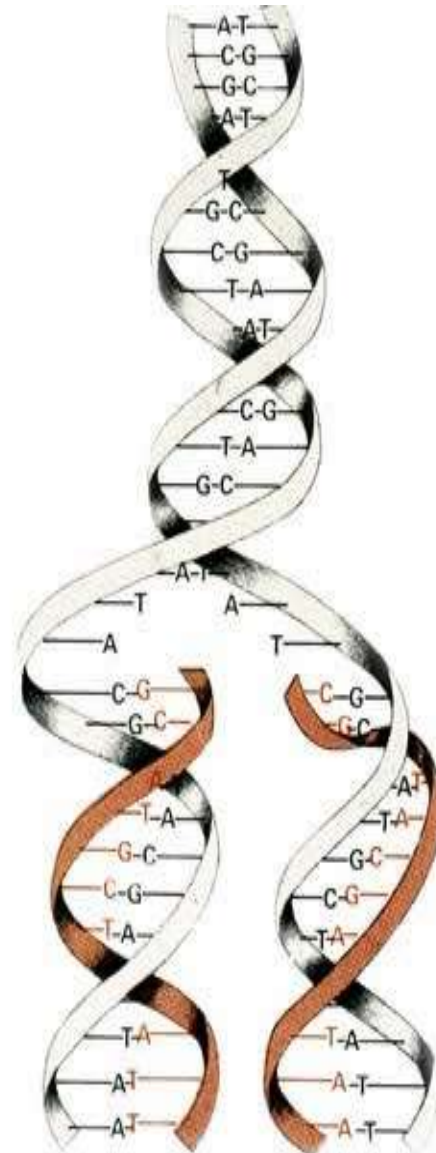
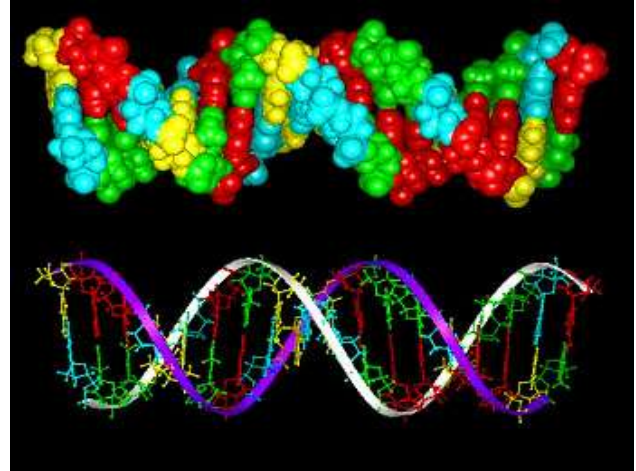
All teachers and school administrators, like the learners, agreed that the after-school experience had been very beneficial to both the schools' overall effectiveness and the learners' educational development.

## C. Practices that Lead to Project Effectiveness

The result of feedback and internal evaluation revealed several elements of Imhotep's Legacy Project IV model that are linked to learners' academic and non-academic growth. These include:

- ❖ The location of after-school activities within the participants' own schools.
- ❖ An expectation that regular attendance was required.
- ❖ Positive professional relationship between the project and school administrators/teachers, hence ensuring that project activities were coordinated to learners' school-day experience.
- ❖ Well-trained, qualified mentors able to recognize and exploit the learning opportunities presented by project activities.
- ❖ A requirement that mentors develop and submit lesson plans, in advance, for review by an experienced university science professor.
- ❖ Learners are exposed to activities that focus on academic and personal development through multi-disciplinary activities involving group work and culminating in a performance assessment.

Collectively, these elements suggest that the success of the Imhotep's Legacy model stems from the effective facilitation of learning by well-qualified mentors, through multidisciplinary, fun science/math enrichment activities that offer learners educational opportunities that differ from their school-day experiences.



## What is the Bottom Line?



The pedagogic model adopted to facilitate the delivery of Imhotep's Legacy Project IV is succeeding in some significant ways:

- ❖ The after-school science/math enrichment initiative is effectively attracting and retaining young learners of African Canadian descent. Stakeholders are overwhelmingly satisfied with their relationship with the project and are willing to participate in future initiatives.
- ❖ The after-school science/math enrichment initiative is helping support meaningful improvements in learners' academic attitude and aptitude, especially in science and math achievement. Participants evince a strong confidence in their ability to pursue tertiary level science and math education.
- ❖ The after-school science/math enrichment initiative is being administered as intended. Although target sites present unique problems, the well-qualified project staff is able to adapt to meet the needs of learners at the host schools, while maintaining the core elements of the Imhotep's Legacy model.



Imhotep's Legacy is demonstrating that effective after-school science/math enrichment projects can be developed, implemented, and sustained in partnership with schools in the community, government institutions, and other organizations. The initiative offers a significant number of participants on a yearly basis, important academic and non-academic developmental opportunities, at no out-of-pocket cost to families and host schools. Overall, these opportunities can enhance young learners' chances of success in school and later in life.

Imhotep's Legacy will continue in its efforts to ensure young learners of African Canadian descent have the opportunity, in a fun environment to: experience the joy of learning science and math; develop a responsible learning attitude; and help counter the complex issues influencing the underrepresentation of African Canadians learners in university science and math programs.