

# Summary of Implementation Strategy and Action Plan to Promote a STEM Education, Innovation and Employment Programme for Barbados

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# Major Findings

## Status of STEM in Barbados



- There is broad consensus that cultivating STEM and STEM-based jobs would reduce unemployment and raise the standard of living of the people.***
- Most of the population is unaware of the development of this HRD strategic plan to promote STEM.***
- There is not a culture of science and engineering. There are too few students pursuing advanced degrees in science and engineering.***
- There is substantial untapped talent that could be groomed into the next generation of technology entrepreneurs and leaders in science, engineering and business.***
- Most of the institutions necessary for developing and maintaining a vibrant research and innovation culture are already in place.***

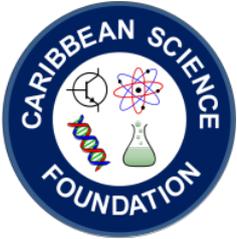




# Specific Strategy To Promote STEM in Barbados



- Establish leadership with authority and budget to oversee and drive the implementation of the programme to promote STEM and STEM-based jobs in Barbados.***
- Reform STEM education at all levels and improve STEM Teacher Training in the use of Problem-Based Learning (PBL) and Inquiry-Based Science Education (IBSE).***
- Create a more friendly environment including access to capital, to facilitate the launch and successful growth of STEM-based businesses.***
- Increase private sector engagement with educational institutions (including vocational) and in science popularization programs.***
- Leverage talent, expertise and resources of the Diaspora.***



# Major Recommendations

## Leadership and Reorganization



- 1. Transform NCST into a semi-independent quasi-government agency (rename NCSE).***
- 2. Establish Scientific Advisory Board of Directors (SABD) for NCSE (Chair of SABD reports to PM).***
- 3. SABD appoints a CEO/Executive Director (“Czar”) for Science and Engineering to run NCSE [Ministers would have easy access to Science and engineering (S&E) experts].***
- 4. Set up permanent line item in budget for S&E R&D.***
- 5. Increase \$ set aside for S&E R&D over next 5 years until goal of 1% of GDP is reached-Johannesburg Declaration***
- 6. Consolidate all R&D funding under new NCSE.***



# Major Recommendations

## Primary and Secondary Education Reform



- 7. Introduce science education and entrepreneurship to all students, beginning at the primary school level.***
- 8. Syllabus should employ PBL and IBSE teaching tools to build upon the curiosity of the youngsters.***
- 9. Include science questions on the 11+ exam.***
- 10. Implement continuous assessment in all schools. Emphasize a teach-test-correct-teach approach until student gains mastery (technology will reduce costs).***
- 11. Strengthen the weaker secondary schools by deploying a more even distribution of all resources.***
- 12. Introduce math Olympiads, reintroduce science fairs, robotics camps (3 different levels), etc., permanently.***



# Major Recommendations

## Teachers and STEM Teacher Training



- 13. Through continuing education, increase the competency of teachers to teach STEM, including the use of PBL and IBSE methods:**
- (a) Mandatory for all primary school teachers to undergo basic training**
  - (b) Secondary science teachers need continuing education (like physicians)**
  - (c) Strengthen/re-engineer Erdiston College to carry out above training**
- 14. Provide performance-based incentive pay for teachers.**



# Major Recommendations

## Tertiary Education Reform



- 15. *Re-engineer tertiary educational institutions to:***
  - (a) *Train students today for the jobs of tomorrow, many of which do not exist today***
  - (b) *Establish research centres of excellence in areas of immediate relevance to the needs of Barbados***
  - (c) *Increase collaborations with the Diaspora to keep pace with cutting edge STEM research***
- 16. *Establish a standing Science and Engineering Education Steering Committee, comprising visionary educators and business leaders from Barbados, the wider Caribbean and the Diaspora, to advise tertiary institutions on education reform (curriculum, teaching and research) that will meet the needs of Barbados.***



# Major Recommendations

## Entrepreneurship Stimulation



- 17. Foster a more friendly and supportive small business environment:***
  - (a) Legislature must swiftly remove unnecessary red tape;***
  - (b) Sensitize civil servants to needs of small businesses; (c) Provide an avenue for continuing business and entrepreneurship education;***
  - (d) Establish monthly Entrepreneurship Forum: entrepreneurs share ideas, meet mentors/angels/lawyers/accountants etc.***
- 18. Make capital more accessible, through e.g. angel/VC/bank partnerships, tax incentives for investors.***
- 19. Support the creation of globally competitive technology companies in addition to companies with local focus.***
- 20. Host business plan competitions that are open to all willing to locate their business in Barbados.***



# Major Recommendations

## Technical and Vocational Training



- 21. Introduce more of the basics of STEM in vocational training schools.***
- 22. Invest in modern tools, software and hardware so that the vocational workforce will be better prepared for the new STEM-based jobs that will be created.***
- 23. Forge closer links between the private sector and the vocational schools.***
- 24. Foster an environment in the vocational training schools where all students are encouraged to:***
  - (a) adopt analytical and logical thinking as the norm***
  - (b) think innovatively about creating new products and services***
  - (c) consider entrepreneurship as a career path***



# Major Recommendations

## Private Sector Engagement



- 25. Push for more regional and local private sector influence and involvement with tertiary and vocational education institutions (e.g. in curriculum reform, and research directions). More research funding from private sector should follow.***
- 26. Encourage more private sector companies to host student internships.***
- 27. Encourage more private sector involvement in growing the entrepreneurial spirit and culture through sponsorship of science popularization activities such as science fairs, robotic camps, math Olympiads, public technology-related seminars, etc.***



# Major Recommendations

## Diaspora Engagement



- 28. Establish formal Diaspora organizations comprising networks of scientists, engineers and others in the Diaspora who are willing and interested in helping to source experts, provide funding and advisory services, facilitate connections and collaborations, give seminars, provide contacts for students aspiring to attend university abroad, etc.***
- 29. Assign at least 25% of the agenda of the biennial Diaspora conference to how the Diaspora can help with implementing the new HRD strategy for Barbados.***



# Conclusion!

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***... the next “Google” can start in  
the Caribbean!***



## Request for Matching Funds for Barbados ICT Companies under ERANET-LAC Consortium



- ❑ ***The CSF is a partner, along with 15 EU and Latin American countries, in the ERANET-LAC project.***
  - ❑ ***The CSF is putting 20,000 Euros into the ERANET-LAC joint second Call to fund one or two early-stage, small Barbadian Companies in the ICT Space.***
  - ❑ ***CSF invites Government of Barbados to add at least a matching amount to fund another one or two additional companies (invitation to co-fund with the CSF briefly mentioned to Minister Inniss in Nov. 2015).***
  - ❑ ***Proposals submitted through EU portal.***
  - ❑ ***The \$ never leave Barbados***
  - ❑ ***Application Period ends 10MAR16***
- Details at [http://eranet-lac.eu/Joint\\_Calls.php](http://eranet-lac.eu/Joint_Calls.php)***