The City Tech I-Cubed Incubator:
An evidence-based approach to fostering and sustaining institutional change

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The City Tech I-Cubed Incubator: Interdisciplinary Partnerships for Laboratory Integration
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Abstract

The City Tech I³ Incubator is a catalyst for transforming STEM laboratory curriculum at City Tech. In turn, STEM Laboratories provide the impetus for fostering positive changes in institutional behavior. City Tech has taken an evidence-based approach to develop new interdisciplinary innovations. Survey data was collected from 650 students and 60 faculty members on their experiences in STEM laboratories located in the Schools of Technology and Design and Arts and Sciences. I³ identified improvements to pedagogical practice such as providing real-world, hands-on experiences in the laboratory, as the most important issue to address broadening participation and developing interdisciplinary innovations in STEM. Having sponsored the development of innovative practices, I³ has begun to focus on scaling up and sustaining these practices by supporting and encouraging faculty who are dedicated to the I³ and institutional goal of transforming STEM laboratories at City Tech.

Significant Survey Findings:

1. Provide more hands-on opportunities in the laboratories.
2. Update laboratory equipment.
3. Make equipment accessible (ex. computer labs).
4. Provide instructional support to faculty (ex. skilled technicians).
5. Create research opportunities for students.

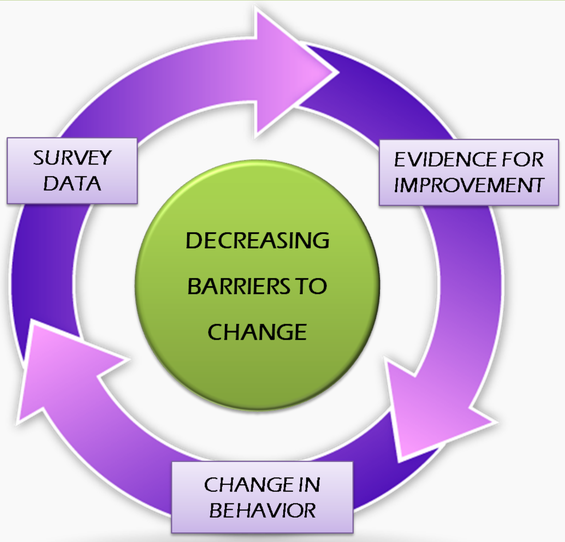

Figure 1 . City Tech's evidence-based STEM laboratory improvement model.

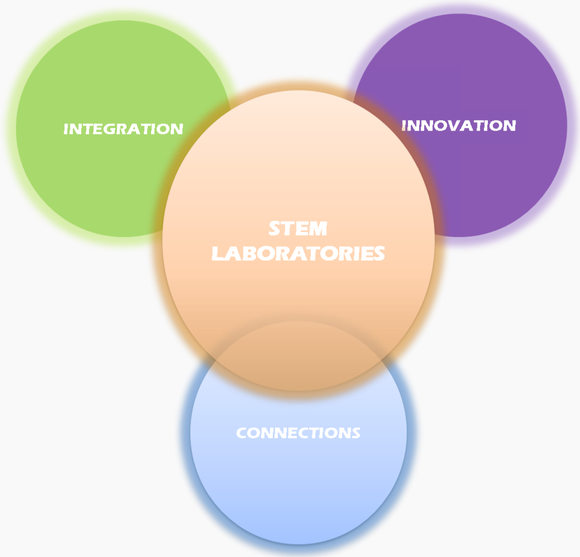

Figure 2. City Tech STEM Laboratories serve to innovate new teaching practices, integrate research and education and connect theory to practice

Project Description

The end goals of the I³ Incubator are organized according to their capacity to integrate, innovate and connect.

INTEGRATION:

- Share data across NSF projects
- Link Research and Education

INNOVATION:

- Create new synergies between departments from the Schools of Arts and Sciences and Technology and Design.
  i. Case study teaching methodologies
  ii. Inter-institutional collaborations
  iii. Inquiry-based laboratory pedagogy

CONNECTIONS:

- Develop partnerships with industry to provide students with experiences and opportunities to put into practice what is learned in the classroom

I³ Innovations with Significant Impact

1. City Tech and the Brooklyn Navy Yard Development Corporation have developed an on-going relationship that has provided City Tech students in the Anchors Internship Program with opportunities for real-world learning and job placement.

2. The City Tech and Kapi'olani Community College Faculty Exchange has served as a catalyst for the college to develop a STEM Center on campus.

3. Inquiry-based re-design of introductory STEM coursework has provided students with increased exposure to the scientific method and independent thought processing.

4. Introduction of case study teaching methodologies into STEM laboratories has begun to make curriculum more modern and relevant to the student experience.

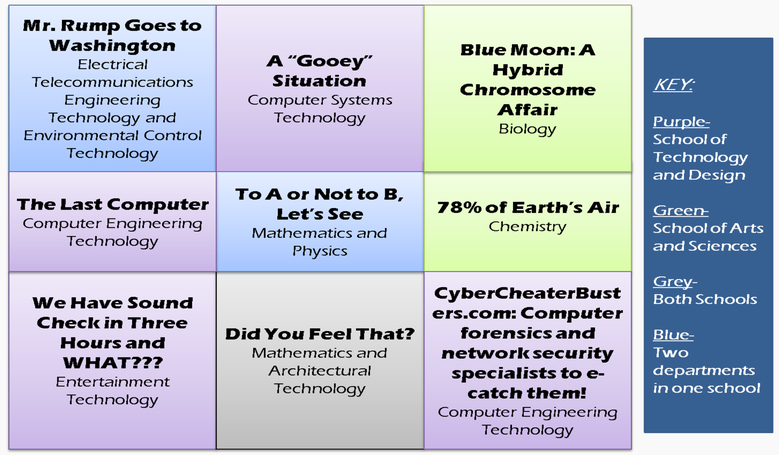

Figure 3. Examples of City Tech interdisciplinary and inter-school STEM case studies.

Acknowledgements

This work is supported by NSF Innovation through Institutional Integration (I³) Grant #930242. The City Tech I³ Incubator thanks the many students and faculty members who have dedicated their time and energy to this project. I³ also thanks Dr. Costanza Eggers, the I³ Incubator external evaluator. Special thanks to Professor Julia Jordan for assisting with the poster design. Additional thanks to the I³ team members not present today; Associate Provost Pamela Brown, Dean Karl Botchway, Professor Reneta Lansiquot and Professor Vasily Kolchenko.