

Urban Science Education in Toronto Inner City Schools: What Happens After Grade 10 Science?

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OISE/UT – CTL - Urban Education Cohort
Secondary - Science

Rationale

- Urban Science Educator
- Noticed many males not continuing in sciences from my experience in 4 inner city schools
- Why are they not continuing?
- Science leads to major benefits
 - Careers
 - Post Secondary
 - Health
 - Environment

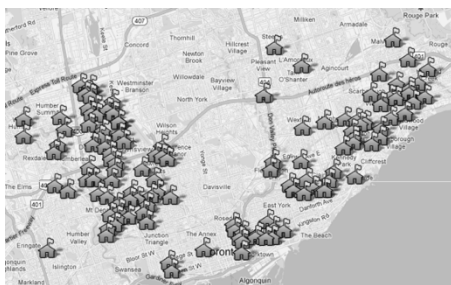
Urban science education In Toronto inner city schools: what happens after grade 10 science?

- a) Which students are not continuing in science past grade 10?
- b) What factors are stopping students in inner city schools from continuing science?
- c) What can be done to increase the value of science to these students?
- d) What can teachers do to engage students in science and get them to pursue further science studies?

Methodology

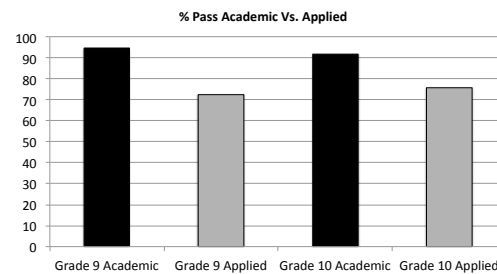
- Interviewed 18 students from two different “Inner City” secondary schools in Toronto
- Both schools part of Urban Diversity Strategy and Model Schools for Inner Cities
- Recorded structured interviews for questions regarding their experience with science
- Reviewed achievement data of the students and schools

Map of Model Schools for Inner City

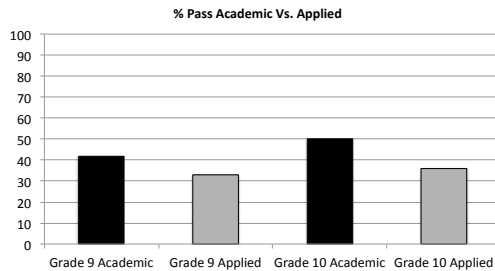


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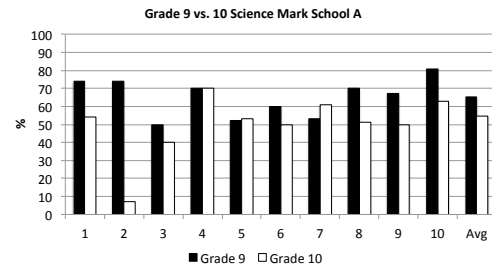
Applied Vs Academic Pass Rate 2010/2011 School B



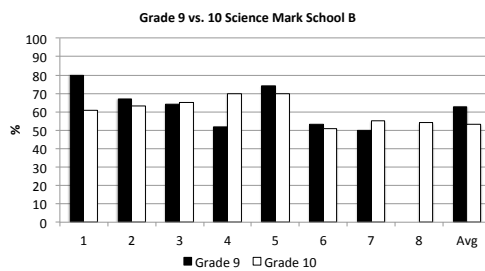
Applied Vs Academic Pass Rate 2010/2011 School A



Individual Students Science Marks School A



Individual Students Science Marks School B



Science Achievement 50-59%

- Demonstrates limited knowledge and understanding of content
- Uses critical/creative thinking processes, processing, planning, skills, and strategies with limited effectiveness
- Expresses and organizes ideas and information, communicates for different audiences, and proper use of vocabulary with limited effectiveness
- Applies and transfers knowledge and skills in familiar contexts with limited effectiveness
- Makes connections between science, technology, society, and the environment with limited effectiveness
- Proposes courses of practical action of limited effectiveness

(The Ontario Science Curriculum, 2008)

Interview Findings

- Student Perspectives
 - Success in Science
 - Academic Support
 - Teacher Relations
 - Views and Values of Science
 - Barriers in Science

Success in Science

"More experiments, way less hand outs, and actually learn useful things, more diagrams so we can actual see, instead of just reading from the paper" (Kevin, 113-114)

Academic Support

"I normally have a few teachers who can help me, most of advice but when its school work I go to pathways, I am part of pathways to education and they offer tutoring" (Salman 22-23)

Teacher Relations

"the difference between successful teachers and teachers who are not liked, successful teachers know how to interact with different kids, the non successful teachers are always telling you to do what they want to do and how they do it. Successful teachers diversify" (Kevin 102-108)

Views and Values of Science

- Z: do you find you learn about your own people, race, culture, background in science
- J: yes
- Z: what are some examples
- J:like.....us creating certain things, us black people creating certain things. And the stereotype that black people can't create things
- Z: do you think teachers teach about that enough?
- J: ya
- Z: was that here at the school?
- J: ya
- Z: if someone says what a scientist look like how would you describe them?
- J: an old white guy hahah (Jamal, 66-85)

Barriers

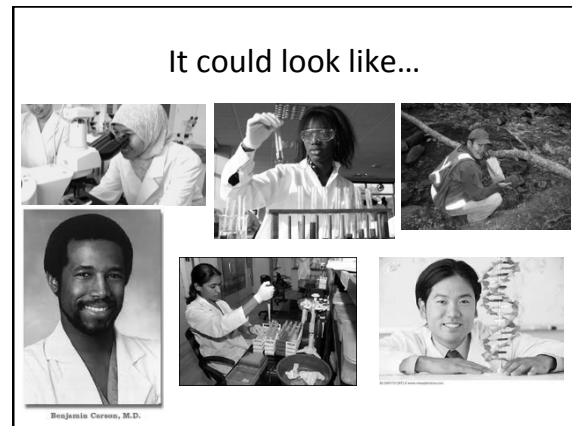
- Z: describe some of the experiences you have had in science either elementary or high school
- K: elementary science was boring it was just hand outs, but grade 7 science was actually interesting because you actually did experiments and with crayfish and geckos but then high school my science teacher made me turned off and made me hate it
- Z: what are some of the successes you have accomplished in science? Things you are really good at?
- K: NONE. Greatest success has been passing class, nothing was interesting nothing stood out (Kevin 35-47)

What does a scientist look like?

- "white male about 30-50 with glasses hahaha"
- "first, first picture, they would...I don't know... honestly...probably like a white guy in a lab coat or something hahah, to be real still. But like I know there is black scientists...you know and all that stuff. But like in a book, that's a white guy."
- "probably white, puffy hair hahaha"
- "....someone in lab coat, beaker, I guess facial look? Like someone who doesn't take care of themselves, beard haha any race."

What does a scientist look like?

- "Albert Einstein"
- "nerds, yea, guy, get paid good, white, but mostly guys"
- "just um lab coat, some beakers, unisex"
- "most shows they put them with a guy with glasses or something, lab coat, mostly like white"
- "an old white guy haha"
- "usually white, for the most part"
- "like a nerd, glasses, lab coat and something like that"



Implications For Science Teachers

- Remove Barriers
- Cultural Content
- Positive Relationships
- Student Ownership
- Inquiry Lab Activities
- Community Integration

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