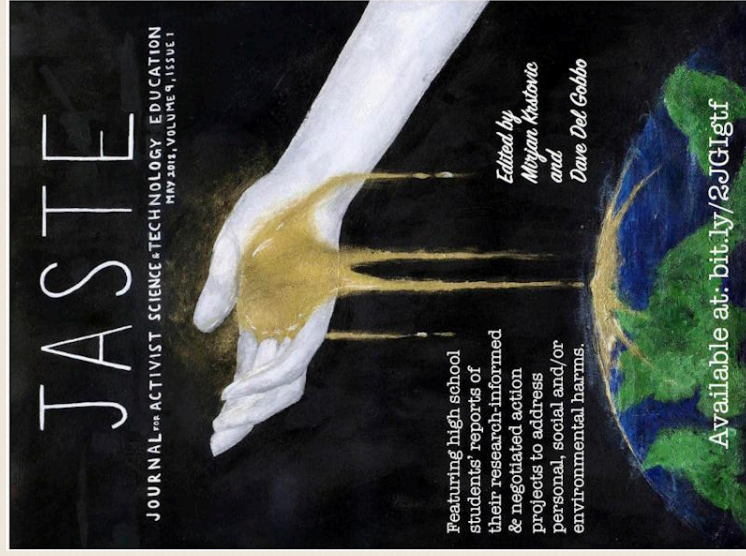


Through our action research, we have published many reports to demonstrate educators' efforts to promote RiNA projects; e.g.:



Also see:  
STEPWISE edited book:

[goo.gl/q98JRV](http://goo.gl/q98JRV)

My online CV:

[goo.gl/CTZyua](http://goo.gl/CTZyua)



Developing and helping with uses of STEPWISE ideas & resources involves a dedicated, creative and energetic team of graduate students, teachers and consultants like that shown above.

If you are interested in having us help you develop and implement educational experiences for learners and learn about their effectiveness, please contact me using the information below:

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# STEPWISE

SCIENCE AND TECHNOLOGY EDUCATION PROMOTING WELLBEING FOR INDIVIDUALS, SOCIETIES & ENVIRONMENTS  
<http://www.stepwiser.ca>

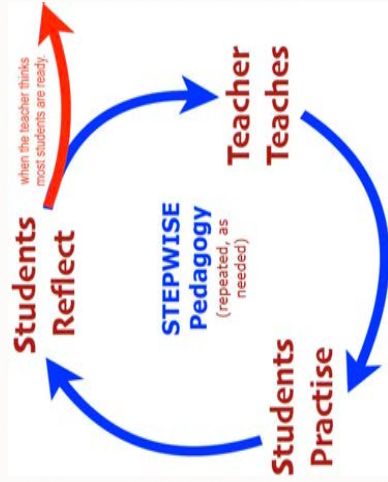


Through STEPWISE, students and others develop and take research-informed & negotiated personal & social actions to address harms that they determine are linked to fields of science & technology.





To encourage and enable students and others to independently develop and carry out RiNA projects to address harms that concern and/or interest them, our research suggests that several conditions (working together) can be helpful, including:



- **A Learning-based Pedagogy;** e.g., as above (e.g., with our resources), first get students to reflect on their attitudes, skills & knowledge (ASK), before teaching them very important ASK, after which they may practise RiNA projects with help;
- **More 'Holistic' Views About S&T;** e.g., teachers can benefit from believing that fields of science & technology (S&T) can be adversely influenced by private funding and government regulations;
- **Supportive Administrators;** e.g., that the principal & teaching colleagues support continuous curriculum inquiry.

## RiNA PROJECTS

Among a great variety of research-informed & negotiated action (RiNA) projects undertaken by students, the one shown below may give you some general ideas about projects that students and others can develop and implement to address harms to individuals, societies & environments that they believe are linked to fields of science & technology.



S T E P W I S E (www.stepwiser.ca)

### Students' Research-informed & Negotiated Action Project

Researching and challenging plastic bottled water uses



#### Introduction

It seems that, instead of drinking water from public water fountains and taps, many people around the world choose to drink water from plastic water bottles. These are so common that it seems that this is the normal way to drink water.

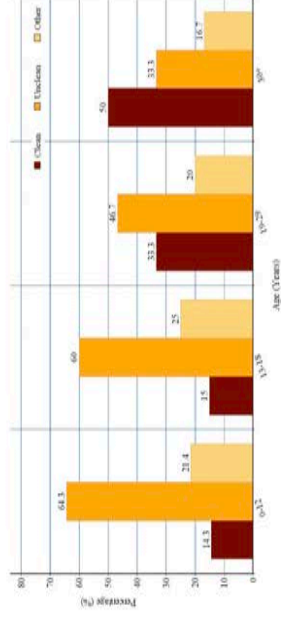
It seems, though, there are many possible harms to wellbeing of individuals, societies and environments from plastic water bottle uses. In this project, students investigated their uses and developed some actions to try to convince people of benefits of drinking from public water sources.

#### Students' Research

Students conducted **secondary research** – mainly through Internet searches – to learn more about possible harms relating to plastic water bottle uses. A major concern was presence of 'BPA' (bisphenol A) chemicals in the plastic to make it hard and clear. They learned that BPA is an endocrine gland system disruptor and is associated with several human diseases, including cancer, early puberty in girls and some birth defects in babies. Another chemical type in plastic, phthalates, also are linked to medical problems like cancer and reduced sperm counts in males. At a more social level, they found that water bottling companies often use up much public water (from aquifers) – depriving citizens of public water. Further, they found that plastic, which does not decompose quickly, can cause harm to many ocean and lake creatures, including birds and fish. Meanwhile, water bottling and sales companies make great profits while charging people relatively large prices for what often is public water!

Having learned much about possible harms linked to plastic water bottle uses, students then conducted **primary research** – in this case, mainly as surveys (studies) to learn about knowledge and uses

of plastic water bottle in their school. For example, as shown below, besides asking people of different ages how much they drink water from plastic bottles vs. taps, they asked people what they thought about the 'cleanliness' of the school's water fountains. They also checked all of the fountains in the school for their water pressure.



#### Students' Actions

Using findings from their secondary and primary research, students discussed ('negotiated') what they learned and what they could do about problems they identified relating to plastic water bottle uses – vs. uses of public fountains – in their school. They decided on at least two actions:

- Letter-writing:** Students wrote a letter to the school principal, copied to the head custodian, asking them to have the school's fountains fixed and cleaned – showing them results of their secondary research and surveys; **Posters:** In their letter, they also asked permission to place a copy of the poster at right above every fountain in the school – hoping this would convince teachers and students to use public water and perhaps use less bottled water. Time ran out to determine effects of their actions.



It's clean.  
It's safe.  
It's free.