

How teaching in an applied, need-to-know format affects student opinions and attitudes towards chemistry

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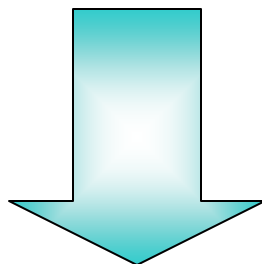


What does a truly integrated
approach look like?



“Chemistry You Need to Know”

Learn as scientists learn



Arrange concepts in need-to-know order




What makes up a real-life integrated program?

- The concepts are fit to the theme...not the other way around!
- Text, practice problems and labs utilize the theme...not in side-bars or special vignettes!
- Themes are chosen that interest students
- Inquiry labs are used when appropriate (at least 1 time per chapter)
- Final projects for each chapter vary among traditional lab, inquiry lab, creative writing or research writing



Themes used

- Antacids
- Airbags
- Glow in the Dark
- Soap
- Sports Drinks
- Hot & Cold Packs
- Chemistry in Industry
- Forensic Chemistry
- Batteries
- Polymers
- Nuclear Chemistry



What effect does the real-life
integration have on student
attitudes?



Student Questionnaire

- 14 questions given as pre-survey.
 - Previous science courses & books
- 14 questions given as post-survey
 - Questions were matched, but pertained to this class and this book.
- Questions on a 1-5 scale. 1 = “strongly disagree” and 5 = “strongly agree”
- Questions were written so that a “5” is always a “positive” response



Textbooks apply science to my life

- Applied Curriculum
 - +1.68
- Traditional Curriculum
 - +0.54

Applied gained 1.14 more than Traditional



I'm interested in chemistry

- Applied Curriculum
 - +0.49
- Traditional Curriculum
 - -0.56

Applied gained 1.05 more than Traditional



I feel chemistry is relevant to my life

- Applied Curriculum
 - +0.71
- Traditional Curriculum
 - -0.13

Applied gained 0.84 more than Traditional



I can see how different science concepts relate to each other

- Applied Curriculum
 - +0.63
- Traditional Curriculum
 - -0.07

Applied gained 0.70 more than Traditional



I like science class

- Applied Curriculum
 - +0.37
- Traditional Curriculum
 - -0.29

Applied gained 0.66 more than Traditional



I am able to read and understand science textbooks

- Applied Curriculum
 - +0.97
- Traditional Curriculum
 - +0.34

Applied gained 0.63 more than Traditional



I feel science is relevant to my life

- Applied Curriculum
 - +0.46
- Traditional Curriculum
 - -0.11

Applied gained 0.57 more than Traditional



I enjoy labs

- Applied Curriculum
 - +0.10
- Traditional Curriculum
 - -0.46

Applied gained 0.56 more than Traditional



I feel comfortable “doing science”

- Applied Curriculum
 - +0.31
- Traditional Curriculum
 - -0.23

Applied gained 0.54 more than Traditional



I feel comfortable using math in science

- Applied Curriculum
 - +0.19
- Traditional Curriculum
 - -0.19

Applied gained 0.38 more than Traditional



I understand what chemistry is about

- Applied Curriculum
 - +0.89
- Traditional Curriculum
 - +0.57

Applied gained 0.32 more than Traditional



I feel like I've "done science" in science classes

- Applied Curriculum
 - +0.84
- Traditional Curriculum
 - +0.54

Applied gained 0.30 more than Traditional



I learn better if science concepts are applied to my life

- Applied Curriculum
 - +0.40
- Traditional Curriculum
 - +0.20

Applied gained 0.20 more than Traditional



I enjoy designing my own lab procedures

- Applied Curriculum
 - +0.25
- Traditional Curriculum
 - +0.62

Applied lost 0.37 more than Traditional



Student Comments



Comments Pertaining to “Application” Aspect of New Text

- I was not very interested in chemistry, I almost didn't take it, but I'm very glad I did. I want to pursue a career in chemistry. I really like that the concepts in the book were applied because it creates easy examples to remember and makes it feel more meaningful to learn about.
- I really enjoyed the connections of science to my life, especially the Antacid chapter. I've never used antacid before, but the gas concepts discussed stayed in my mind whenever I went up to the mountains, or rode on an airplane.
- I love the textbook in many different reasons, but it's greater than most average textbooks because the chemistry is applied into our daily lives.



More information



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