



Reflections

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Publisher of *Introductory Physical Science (IPS)* and *Force, Motion, and Energy (FM&E)*
Thoughtful Curricula Developing Thinking Students

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Atlantis Academy: Addressing Learning Differences with IPS and FM&E

By Justin Kraft

Students come to Atlantis Academy, where I teach high school science in West Palm Beach, Florida, because they have difficulties that prevent them from being able to learn in a typical classroom setting. Many of them have behavior and learning differences, such as Attention-Deficit Disorder (with or without hyperactivity) and Oppositional Defiant Disorder. Most of the students are on vastly different levels in reading and math. In one class, for instance, I have students whose reading levels range from 3rd-grade to college. Further complicating matters, their math skills rarely coincide with their reading abilities.

My students' learning styles also make it difficult for them to grasp scientific principles in a typical classroom, where the current trend in science education often favors replacing hands-on labs with videos or written explanations. A good number of these students have been through enough negative experiences in school that they believe they are incapable of fully understanding complex science. But I knew they could with the right instructional materials and methods.

With *Introductory Physical Science (IPS)* and *Force, Motion & Energy (FM&E)*, I have found exactly what I needed to reach my students in an effective way. Although the reading level of the texts is high for some, the hands-on labs allow the students to draw their own conclusions about what is happening, instead of just taking my word for it. The curriculum allows

students to grasp physical science without needing to be on grade level for reading or math.

Because of the diversity of reading levels and attention spans among my students, I scaffold the materials where needed with more detailed lab procedures and alternative questions on the tests. But for the most part, students are able to grasp pertinent information from the texts themselves.

Safety is another difficult issue I deal with

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New Articles Available For IPS and FM&E Teachers ... all online!

Units of measurement can be a confusing topic for students. We've recently posted two new resource articles to help you tackle units of measurement and conversions within the SI system. You can find "Scientific Measurements: Quantities, Units and Prefixes," written by *IPS* co-author H. Graden Kirksey, and "Converting Units," by *FM&E* co-author Robert Stair, on our website at www.sci-ips.com/ips/articles.html.

SCI works to provide you with teaching and learning resources in addition to textbook programs. Special essays, as well as those published in *Reflections* and *eTips for Teachers*, are posted on our website for your review. To get either of these publications delivered directly by email, join our distribution list today at www.sci-ips.com/newsletter.html.

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in my classroom. We have several balances that students can use to measure out quantities of chemicals, but the students would often act up while waiting in line to get the chemicals. To avoid this problem, I pre-dispense all chemicals, and distribute them either in test tubes or disposable microbeakers.

Full lab write-ups are also a standard requirement for each student, but I allow “multi-genre” reports as long as they fulfill all my requirements of a lab report. With this more flexible approach, I’ve received reports in the form of posters, narrative stories, and comic books. This gives students every opportunity to show they possess the knowledge, even if they are unable to communicate it in written form.

After incorporating these strategies and the strengths of the *IPS* and *FM&E* texts into my classroom, I have seen students approach labs in a much different way than they did at the beginning of the year. Their first lab, before getting into the textbooks, involved determining if a peanut butter sandwich lands peanut butter

side up or down when dropped off a table. Students weren’t sure how to pursue this inquiry, with varied approaches ranging from dropping a bunch of bread off a table to weighing the peanut butter to eating their lab setups. In contrast, they now approach their labs — we just completed *IPS* lab 4.6, Isopropanol as a Solvent — by designing a clear path to finding an answer. In fact, several students have approached me and told me they can troubleshoot problems at home more quickly than before, and attribute this ability to doing so many labs in school.

The *IPS* and *FM&E* curricula have greatly enhanced the science learning experience of my high school students. They enjoy science more than they thought they ever would and succeed where they had not succeeded before, adding to their self-confidence and easing behavioral challenges. And these results were achieved without having to resort to a textbook written for a “lower-level” reader. Now, if only Science Curriculum would come out with chemistry and biology texts...

Do you teach students who are new to English?

Science Curriculum Inc. is looking for teachers who have both a dedication to the *IPS* and *FM&E* programs and experience working with an “English Language Learner” (ELL) student population. We’d like to know more about your school and students, your teaching experience, and how ELL students have impacted your approach to *IPS* and/or *FM&E*. If you would like to share your story with us, and help better our program at the same time, send a short email to School Services Coordinator Tasha King, at tasha@sci-ips.com. We look forward to learning more about our teacher base and are eager to hear from you!

News and Notes...

Summer Workshops Fast Approaching

Year after year, teachers who have attended the *IPS* and *FM&E* workshops in Golden, Colorado, and Wellesley, Massachusetts, write to tell us how much these workshops have benefited them and their students. Each workshop provides a perfect opportunity for both veteran teachers and those new to *IPS* and *FM&E* to prepare for teaching the course by experiencing the entire program and its philosophy.

For more information about Colorado workshops, please call Linda Baldwin at 800-446-9488, x 3995, or 303-273-3995. She can also be reached by email at lbaldwin@mines.edu. You can also register for the CSM workshops online at http://hagrid.mines.edu/outreach/cont_ed.

For information about the Wellesley, Massachusetts,

workshop, contact School Services Coordinator Tasha King at tasha@sci-ips.com or by phone at 800-507-0957.

IPS Video Loops ... now available on DVD!

At the request of various schools that are replacing VCRs with DVD players, we have translated the original *IPS* film “loops” from their current VHS format to DVD. SCI will continue to provide the VHS format option for those schools that prefer it.

Both versions contain all 10 of the original *IPS* film “loops,” four-minute segments designed as supplements to the *IPS* curriculum on such topics as radioactive substances, molecular motion and diffusion, and thermal expansion of gases and liquids, among others.

Both the VHS and DVD formats of “Loops” are available through SCI. For ordering information, see our website at www.sci-ips.com or call us at 888-507-0957.

Application for the
***Introductory Physical Science (IPS) Workshop
Force, Motion, and Energy Workshop
Constructing Tests for Science Courses Workshop***

Colorado School of Mines
July 8–20, 2007

Course selection - please check the appropriate workshop(s):

- Introductory Physical Science Workshop – July 8–20, 2007* (CT-0508-07M)
 Introductory Physical Science Workshop (Chapters 1-5 only) – July 8–13, 2007 (CT-0508-07M)
 Introductory Physical Science Workshop (Chapters 6-10 only) – July 15–20, 2007 (CT-0508-07M)
(To register for this workshop, you must have previously taken a Chapter 1-5 workshop.)
 Constructing Tests for Science Courses Workshop – July 8–13, 2007 (CT-0359-07M)
 Force, Motion, and Energy Workshop – July 15–20, 2007 (CT-0509-07M)

NAME _____

GENDER (for housing arrangements only; please circle one) M F E-MAIL _____

SOCIAL SECURITY NUMBER _____ DATE OF BIRTH _____
(Required when taking course for credit)

HOME ADDRESS _____

HOME PHONE _____

SCHOOL NAME _____ PHONE _____

SCHOOL ADDRESS _____

SCHOOL DISTRICT NAME _____

What is your major field of science teaching? (check one)

Physical Science General Science Earth Science Other (please specify) _____

What was your major in college? _____ Graduate concentration, if any _____

Have you attended a previous IPS or FM&E workshop or summer program? Yes No

Have you taught IPS or FM&E before? Yes No

If yes, for how many years? _____ At what grade level(s)? _____

Tuition cost: For the two-week IPS workshop, the tuition cost is \$499; for each one-week workshop, it is \$250.

Credit: Credit is awarded by Colorado School of Mines as graduate-level semester hours in Continuing Education. The two-week IPS workshop can be taken for 4 semester hours credit; each one-week workshop can be taken for 2 semester hours credit.

I do ___ do not ___ plan to take the workshop for credit. NOTE: The tuition is the same with or without credit, and all registrants are expected to complete and submit all graded assignments and tests.

Your accommodation preference:

Single occupancy room & board: One week (\$309) _____ Two weeks (\$622) _____

Commuter's lunch (Recommended if not residing on campus.) One week (\$40) _____ Two weeks (\$80) _____

Signature _____ Date _____

A deposit check for \$35 payable to Colorado School of Mines must accompany this application. Please mail both to:
Ms. Linda Baldwin, Office of Continuing Education, Colorado School of Mines, Golden, CO 80401.

Phone: 800-446-9488, x3995 or 303-273-3995; email: lbaldwin@mines.edu