Introduction to Systems and Traditional Courses

Obviously, *Introduction to Systems* (*IS*) isn't conventional instructional material. Its concern for clarifying the sense-making process, its use of immediate reality as "textbook," its emphasis on learning from firsthand experience, and much else make that clear.

But perhaps the difference that for many is the most disconcerting is its downplaying of the boundaries between specialized fields of knowledge. The academic disciplines and the school subjects based on them are the primary organizers of schooling from the upper elementary level through the university. Most teachers are attracted to teaching because of an interest in a special field. They're trained and licensed as specialists. They read specialized journals, attend specialized conferences, are assigned by schools to specialized departments, and probably tend to socialize on the job with others of the same specialization.

Those experiences are powerful and not to be denied. In recognition of that fact, we've taken special note of communication skills, literature and art, science, mathematics, and social studies.

Here are some ways to link *IS* with traditional subjects:

Communications skills:

In addition to the reading required by the text of *Introduction to Systems*, many Investigations include written data for analysis or send learners in search of additional written information. Because each Investigation deliberately requires mental skills more complex than simple recall, real understanding of the written material is necessary.

More than most coursework, *IS* emphasizes writing skills. The learner's journal is the central tool for recording results of Investigations. Its use will increase learner writing skills.

Careful evaluation by the teacher or mentor is essential. For each Investigation, checking each learner's journal will quickly verify reading comprehension and other aspects of learner performance.

Teachers or mentors should also review the learner's journal to track level of writing skill. Rewriting to improve clarity may be needed. Clear, simple communicating should be a major goal. Proper spelling, good grammar, and proper sentence construction are, of course, necessary.

Encourage learners to use diagrams, sketches and other graphic ways of depicting information in their journals. Both the words and the pictures should be checked for clarity and effectiveness.

Some controlled peer review of communication effectiveness may also be extremely helpful in improving student skills, but it must be done in ways that avoid excessive anguish for the student being criticized. Keep the reviewed document originator's identity anonymous when showing that person's work to others. This is, of course, easier if journals are computer-based.

When problems are discovered, avoid giving answers. Instead, generate questions that lead the learner to rethink and revise. Encourage self-evaluation.

Literature and art:

Insights provided by *Introduction to Systems* will give new meaning to any piece of poem or drama, any building, any painting, tapestry or sculpture from anywhere in the world, past or present.

IS identifies ideas, values, and important ways of acting, and explores how they differ from society to society. It traces changes in ideas and ways of acting across time, identifying processes causing them to evolve. Because states of mind are the wellsprings from which all literature and art flow, systematizing their study helps learners build an insight-enhancing tool that will be permanently useful.

As a mentor, you can enrich both the appreciation of literature and art and the effectiveness of *IS* by pushing learners to link what's being learned in *IS* to analysis of additional art or literature. This process should include further work for which *IS* provides a base—identifying the society that's the source of whatever is being studied, and its important ideas and ways of acting.

Consider traditional oriental rugs, for example. Close relationships exist between rug production and environment, action patterns, and shared ideas within the societies that produce them. The same principle applies to Roman edifices, "Beowulf," or rap music.

Science:

"The whole of science," said Albert Einstein, "is nothing more than a refinement of everyday thinking." Because closing the gap between formal schooling and everyday thinking is one of our major aims, Introduction to Systems is, along with everything else, a science course.

Science, finally, is about gathering and interpreting information. More than most science courses, we emphasize scientific attitudes: absolute honesty, respect for first-hand information, and a willingness to suspend judgment until adequate facts are available.

Developing these habits of mind is vital. We say, loudly and clearly, "Don't believe everything you read. Go find out for yourself." Learners need to appreciate that science is a way of thinking and doing, much more than something they merely read about.

Further (and unlike many science courses), *IS* focuses on systemic relationships. This is central to understanding science, but is often neglected by traditional science classes. Looking for cause-effect links between seemingly-unrelated phenomena is as central to *IS* as it is central to all other scientific study. The general systems model in Part 2 can be applied to any phenomenon being studied, bringing much-needed order and coherence to information about solar systems, protozoa, hurricanes, auto engines, and every other part of science and engineering.

However, unlike standard science courses, *IS* focuses on the human contexts in which scientific phenomena play a role. Thus we deal, simultaneously, with both the world of natural phenomena and the effects of those phenomena on people.

Traditional specialized science courses have their place in the curriculum. They will be strengthened if learners adopt *IS*'s systems-based viewpoint and its "hands-on" approach that confronts problems directly. Of course, some intellectual challenges are not directly accessible to learners, so secondary sources have their place. However, these sources should be supplemental to learning, not the central sources of knowledge.

NOTE: We've recently added a large compendium of possible science projects; enough for a year's study—in essence, an "Introduction to Systems in Science." See SystemsScience.pdf (marionbrady.com).

Mathematics:

Quantifying is essential to understanding. Many *IS* investigations, therefore, require learners to exercise practical mathematics skills such as measuring, gathering statistics, graphing numerical data, and so on.

One problem with standard math courses is their neglect of its practical aspects. When success in an *IS* Investigation requires application of principles of mathematics, learners are more likely to accept its essential role in making sense of everyday life in the real world. To see how this works in practice, check out: http://www.marionbrady.com/IntroSystems/DrWilliamWebb-Testimonial.pdf

Of course, as we've said elsewhere, *IS*, by itself, cannot replace separate classes that focus on development of math skills. However, if these classes are linked to reality-based problem solving, math-phobic learners can favorably revise their opinions about math courses.

Social Studies:

Introduction to Systems is, along with much else, a powerful social studies course, focusing on human societies as the ultimate "systems." Because such systems are the "master organizers of meaning," they're the context of all knowledge. Understanding them is the key to understanding every significant kind of information.

Investigating complex relationships of people to their environment, an integral part of *IS*, necessarily emphasizes geography and related earth science learning. Economics, political science and the other social sciences are treated as what they in fact are: studies of societal sub-systems.

Because formal study of the dynamics of change requires the description and analysis of societies over time, historical analysis is integral to *IS*.

Main webpage for Introduction to Systems:
http://www.marionbrady.com/IntroductiontoSystems.asp