



Less Is More: Trimming the Overstuffed Curriculum

By
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□ *Through a science curriculum "diet," districts discover that less topics could **fatten** students' understanding.*
This is by Lisa Fratt.

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- ❑ The main educational process in a typical district goes something like these:
- Some popular topics are taught year after year in the elementary science curriculum.
- Teachers who branch out to introduce other topics are usually **get burden** in gathering materials for the instructions.

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- In fourth or fifth grade, science becomes an exercise in **memorizing technical terms** and covering the textbook with dozens of topics.
- The approach with **heavy on vocabulary** and **light on actual science** continues through high school.
- ❑ These methods have failed to produce science literacy.

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- ❑ The Nation's Report card: Science 2000 shows that the average scores of 4th, 8th and 12th graders failed to improve between 1996 and 2000.

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- ❑ The Third International Maths and Science Study characterizes U.S. math and science curricula as "**a mile wide and an inch deep**".
- Instead of forcing students to cover very much content and vocabulary, experts recommend a ***science curriculum "diet"*** to help take a bite out of the nation's current science achievement problems.

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- ❑ **Designs for Science Literacy**, a report from Project 2061 of the American Association for the Advancement of Science (AAAS) *recommends that schools create more time for in-depth study by*
 - reducing the number of major topics
 - cutting unnecessary details or subtopics
 - de-emphasizing technical vocabulary and eliminating repetition.

Science Diet Essentials

- ❑ To implementing a "science diet" , the first step, says Arthur Camins, director for Hudson Public Schools, is to take a look at **how students learn science**.
- ❑ The National Science Education Standards and Benchmarks for Science Literacy, published by AAAS contains statements of **what all students should know and be able to do in science, mathematics and technology** at the end of grades two, five, eight and 12.

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- ❑ When Hudson improved its science curriculum, teachers and administrators compared standards to what teachers actually taught in the classroom.
- Camins said that "We found there was no consistency. Some topics were taught **twice**; others **not at all**."
- ❑ Repeating topics without developing a broader of understanding is a cause of the **overstuffed** curriculum.

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- ❑ Christina Hilton, curriculum program coordinator in Indiana, suggests that **districts *go through the state standards to***
 - *find where they meet the standards*
 - *fill in the gaps and*
 - *trim away the extras.*

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- When a district is ready to review its curriculum, **follows steps** to trim topics, sub-topics and vocabulary. Here is a summary of the steps:
 - List topics in the current curriculum or textbook.
 - Compare the list with learning goals in Benchmarks.

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- Create a second list of possible topics for elimination—which are not linked to a specific learning goal.
- Ask science teachers to drop one topic at a time and invest additional time in a core topic.
- Evaluate the effects of the change.

Then repeat the five steps, involving more topics.

A Balanced Diet for Reform

- Trimming the science curriculum and aligning it to national and state standards is part of the reform process.
- Selecting the right type of curricular materials is also important.
- Nelson says, *"Science educators and cognitive scientists have found that telling kids lots of stuff does not result in a lot of learning."*

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- ❑ A quality science curriculum;
 - reduces the content,
 - engages students in science and the real world
 - provides time for students to communicate their thoughts and understanding.

Cont...

- ❑ Districts working on trimming the science curriculum should also determine the most appropriate grade level for topics.
- For example, there is topic '**solar system**' in elementary education. But research shows that at this age level children can not easily comprehend the science of the solar system.

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- So a science unit on the solar system is limited to **memorizing** planet names.
- But, if the unit is introduced at the middle school level, students can begin to develop an understanding of the solar system.

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- Hudson considered grade levels when overhauling its science curriculum. Camins said that *"If you take topics accessible to students' level of cognitive development, the curriculum becomes much more efficient."*

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- Nelson cautions that science reform can't be purchased as a particular curriculum or text book.
- **For example**, teachers in Rockford Public Schools have a textbook for each course and binders filled with objectives, activities and assessments. *The point is not to 'do' or 'cover' the entire textbook or binder, but to give teachers an array of tools to help students learn.*

Sticking to the Diet

- ❑ It may take two or three years just to think through what to leave in the curriculum and what to throw out. The process should include
 - a substantial professional development program,
 - involving partnerships with outside organizations and a community education effort that gives administrators and teachers the chance share research with them.

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- Nelson warns that teachers will have to leave out some of their favorite topics and activities as they cut the curriculum to be effective.
- Because of Hudson initiated its new science program, Camins has heard from almost every teacher how much **kids are enjoying science**.
- He says, *"If you want to do anything meaningful and worthwhile, it takes time."*



“Less Is More”

Thank you