Nutrition Education: Integration, Stand-alone, or Both.

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Integration...what does it look like?

Nutrition concepts are intertwined with other subject matter. eg. Math or PE class includes nutrition.

1st approach

♦ Nutrition and physical activity objectives & content developed
♦ Then content aligned to education standards
Integration...what does it look like?

**Elementary**
- Nutrition with math, reading
- Nutrition with food service & school lunch/breakfast

**Junior & Senior High**
- Nutrition with math, English, science, geography, history, **health**, PE
Integration...what does it look like?

Develop nutrition curriculum, tailor to standards, align.

♦ Nutrition and physical activity objectives & content developed with help of teachers
♦ Leave No Child Behind
♦ Wellness Committees
♦ Result: Ed Standards driving force
♦ Content aligned to education standards
Integration...what does it look like?

- Align curriculum to content standards
- Hired DOE expert; authority; independent
Integration... what does it look like?

EatFit Standards & Competencies Achieved - Summary

Developed by Lori Mann, Consultant

Completing the main lesson activity will help achieve the middle school standards and competencies as indicated below. This brief summary does not include take-home activities, lesson reinforcement, or food preparation.

1. EatFit Foundation
   - Math: AF 2.2, MDAP 11.1, 8.PS 8.0
   - Nutrition: 2, 5, 8, 9 introduced
   - Health: 1
   - P.E.: 6, 7, 3 & 4

2. What Are You Eating?
   - English Language Arts: 6 R 1.1
   - Science: 6, 7, 7.7
   - Nutrition: 1, 2, 4 all introduced
   - Health: 1

3. Get Focused for Fitness
   - English Language Arts: 6 W 1.1, 12, 21, 22, 23, W 1.1, 1.4
   - Nutrition: 8 introduced
   - Health: 1
   - P.E.: 4, 7, 3 & 4, 8, 3, 4

4. Energy
   - Mathematics: 6 NS 1.3, AF 1.2
   - Science: 7, 8, 9
   - Nutrition: 2, 5, 8, 9 developed
   - Health: 1, 5, 7, 0
   - P.E.: 6, 3, 1, 7, 2, 3, 3, 4

5. Food Label Quiz
   - Mathematics: 6, MR 1.1
   - Nutrition: 2, 8, 9 developed, 1, 2 mastered
   - Health: 1, 9
   - P.E.: 7, 3

6. Go for Breakfast
   - Nutrition: 1, 5 developed
   - Health: 1
   - P.E.: 7, 3

7. Body Work
   - Nutrition: 6 developed
   - Health: 1
   - P.E.: 6, 3, 4, 7, 1, 8, 3, 4

8. Eat for a Fast Food
   - Mathematics: 6, MR 1.1, 7, MR 1.1
   - Nutrition: 1, 3, 8 mastered, 3 application, 6 developed
   - Health: 1, 9
   - P.E.: 7, 3

9. TV Training
   - English Language Arts: 6 L 3.1, 9, 8 L 3.19
   - Nutrition: 5 developed
   - Health: 1, 9
   - P.E.: 7, 3

Content Standards at a glance

Mathematics
- 2.3: algebra: Solve problems involving rates, average speed, distance, and time.
- 1.1: Statistics, Data Analysis, and Probability: Compare the range, mean, median, and mode of data sets.

English Language Arts
- 8.6: Probability and Statistics: Students organize and describe distributions of data by using a number of different methods, including frequency tables, histograms, standards, line and bar graphs, stem-and-leaf displays, scatterplots, and box-and-whisker plots.

Nutrition
- 2.0: Food: Understands and practices making healthy food choices including planning and preparing food and meals, assessing personal need, and applying strategies to reach personal nutrition goals.
- 2.0: Nutrition: Identifies and explores factors influencing food intake, including family, friends, culture, marketing, emotions, sensory stimuli, and food availability.

Health
- 1.0: The student understands and demonstrates ways in which his or her health and well-being can be enhanced and maintained.
- Analyze the immediate and long-term effects of personal health habits on body systems.
- Analyze the ways in which physical activity contributes to their physical, mental, emotional, and social health.

Physical Education
- 3.0: The student will achieve and maintain a health-enhancing level of physical fitness:
  - Correctly demonstrates activities designed to improve and maintain muscular strength, endurance, flexibility, cardiovascular function, and proper body composition (the five health components of fitness).

English Language Arts
- 4.0: The student will achieve and maintain a health-enhancing level of physical fitness:
  - Describe the benefits of regular participation in physical activity.

Lesson 2: What Are You Eating?

Reading
- 1.1: Read aloud narrative and expository text fluently and accurately with appropriate pacing, intonation, and expression.
Integration…what does it look like?

2nd approach
Develop curriculum in conjunction with standards
♦ at same time
♦ existing math, English and PE standards
♦ wellness committees in place
Integration…what does it look like?

Start with standards, then develop nutrition in conjunction. Stds did not drive nutrition objectives but did effect design of activities.

Often used by PE teachers
Find place in existing curriculum
Integration…what does it look like?

Lessons aligned with math & PE standards.

<table>
<thead>
<tr>
<th>Math standards</th>
<th>PE standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number sense 1.1</td>
<td>Students assess &amp; maintain level of personal fitness to improve health and performance. 3.3, 3.4, 3.5</td>
</tr>
<tr>
<td>Statistics, data analysis and probability 1.1, 2.2, 3.4 &amp; 3.5</td>
<td>Students demonstrate &amp; use knowledge of psychological concepts, principles, &amp; strategies applying to learning &amp; performance of physical activity. 5.4 &amp; 5.5</td>
</tr>
<tr>
<td>Algebra &amp; functions 2.1</td>
<td>Students demonstrate &amp; use knowledge of Psych &amp; soc concepts, principles, &amp; strategies applying to learning &amp; performance of physical activity. 5.2 &amp; 5.3</td>
</tr>
<tr>
<td>Measurement &amp; geometry 2.1 &amp; 2.2</td>
<td>Students demonstrate knowledge of physical fitness concepts, principles, and strategies to improve health performance. 4.2, 4.7</td>
</tr>
<tr>
<td>Algebra &amp; Functions 1.0 &amp; 1.1</td>
<td></td>
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</tbody>
</table>
Integration.....benefits

- Teachers under pressure to focus on the basics.
  Increasingly more difficult to get teachers to teach nutrition. Why?
  No time.
  But if math and English ed standards met, then teachers willing.

- Cost.
- Existing model: science and social studies are embed in reading and math.
- More sustainable if use existing structure like Cooperative Extension
Integration.....challenges

♦ Regular classroom teacher not trained.
♦ Time.
♦ Gatekeeper varies with school & district.
♦ Buy-in by teachers, principals, curriculum specialist, Wellness Committee. How do you market to these people?
Stand alone…what does it look like?

Separate & formal nutrition class devoted solely to nutrition content.

♦ Dedicated time for nutrition objectives/program.

♦ A model for this would be computer lab or PE class. The entire class goes as a group to another location.

♦ Instruction provided by a specialist teacher.
Stand alone... benefits

• Teacher has special nutrition training. Maybe an RD.
• Dedicated lab space.
Stand-alone...challenges

♦ Time. Takes away from other subjects [assume no extension of school day.] Parent asks, ‘What does child give up?’ Competition among subjects.

♦ Cost. Who pays for dedicated nutrition teacher? Budget for food tasting and preparation?

♦ Space. Does the school have dedicated space for a nutrition lab?

♦ Expertise. Where get the pool of credentialed teachers with nutrition coursework?

♦ In budget cuts, who is first to go?
Both.....what does it look like?

♦ Separate & formal nutrition class. Nutrition would have equal weighting with math and other core content.

AND

♦ Nutrition activities would be incorporated into food service, math, English, science content.
Issues......#1

• Schools focus on and excel at increasing knowledge. It is what they do best.
• Nutrition education focuses on improving skills and changing behaviors.
• The temptation is to focus on nutrition knowledge. But this K is elusive & insufficient.
Example: Nutrition educators focus on K about food guides. But that K is transient.

- **Daily Food Guide (Basic Four), Meat Group, 2 servings** (1956-1970s)

Issues......#1


• *MyPyramid*, **Meat & Beans Group**, *5½ ounce equivalents*; 1 ounce equivalent = 1 oz lean meat, poultry or fish; 1 egg; ¼ c cooked dry beans; 1 T peanut butter (2005)

• *MyPlate*, **Protein Foods Group**, *5½ ounce equivalents*; 1 ounce equivalent = 1 oz lean meat, poultry or fish; 1 egg; ¼ c cooked dry beans; 1 T peanut butter. (2011)
• So child in Kindergarten in 2004 will be introduced to the Food Guide Pyramid; 2005 MyPyramid and new terminology for food group names and portions; 2011 MyPlate and more new terminology for group names.

• What is most important about a food guide such as MyPlate? Remembering the accurate names of food groups? Memorizing 5 ½ ounce equivalents? Or being able to apply the concepts in real life?
Issues......#2

• Integrated....so what?

• Finished curriculum. Measured impacts on nutrition objectives & published 2 papers. Wellness committees said ‘Great’. But teachers said “Wait a minute”. Schools said so what? “We need to work on ed standards. They are part of standardized testing. We don’t care about nutrition objectives.”

• Alignment unequal impact. Alignment proves nothing.
Issues......#2

Searched literature.

♦ Surprised. No examples of nutrition education’s impact on education standards. No examples of nutrition education’s impact on academic performance either.

♦ No protocol for measuring impact.
Issues......#2

• Alignment does not = impact.
• Impact---refers to impact of nutrition program on ed standards. This is assessed via a formal study with kids in the classroom.
Issues......#2

• Nothing in literature.
• Creative team including a doctoral student.
• Decided to create a protocol and design a study to examine nutrition education’s impact on academic performance. Why? This is what we could market to schools/teachers.
• Measured academic performance using math and English education standards.
• Nutrition \rightarrow Learning
• Nutrition \rightarrow Academic performance
• Nutrition education \rightarrow Academic performance
• Nutrition education \rightarrow Education standards

No research to support. We need to document.
7-step protocol developed

To evaluate impact of a health education curricula on standards achievement

1. **Align** curriculum to content standards
2. **Compare** content standards addressed in curriculum with those assessed by STAR testing
3. **Select** specific standards to evaluate
4. **Receive** permission from State DOE to use copyrighted STAR test questions
5. **Develop** items based on STAR test items and curriculum content
6. **Assess** items using cognitive testing procedures
7. **Revise** items as appropriate.

Horowitz et al. 2008
STAR* testing in California

Students in grades two through eleven take multiple-choice CSTs* for various subjects. Students in grades four and seven complete a writing assessment—the CST for Writing. All children take. Many versions: general, Spanish, learning disabled, disadvantaged.

* STAR = Standardized Testing and Reporting Program
CST = California Standards Test
7-step protocol developed

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Horowitz et al. JNEB 2008
DOE gave us permission to use their previous test questions. We adapted them to nutrition content.
7-step protocol developed

Compared standards in curriculum with those assessed by STAR

6th grade-
- English-language arts
- Mathematics
- Written composition

7th grade-
- English-language arts
- Mathematics
- Written composition

8th grade-
- English-language arts
- Mathematics
- History-social science

Nutrition
Developed items based on STAR test items & curriculum content

### 2.3 - Solve problems involving rates, average speed, distance, time

**Example from STAR:**

Jerry read a 200-page book in 10 hours. At that rate, how long will it take him to read a 320-page book?

<table>
<thead>
<tr>
<th>Option</th>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>16 hours</td>
</tr>
<tr>
<td>B</td>
<td>18 hours</td>
</tr>
<tr>
<td>C</td>
<td>24 hours</td>
</tr>
<tr>
<td>D</td>
<td>32 hours</td>
</tr>
</tbody>
</table>

**Example from Instrument for our study:**

Billy can do 20 sit-ups in 30 seconds. Assuming he can keep the same pace, how many sit-ups can he do in 1 minute?

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>40 sit-ups</td>
</tr>
<tr>
<td>B</td>
<td>60 sit-ups</td>
</tr>
<tr>
<td>C</td>
<td>40 minutes per sit-up</td>
</tr>
<tr>
<td>D</td>
<td>20 sit-ups in 30 seconds</td>
</tr>
</tbody>
</table>
6. Janee counts the number of times her heart beats in 6 seconds. She counted 8. Janee wants to know how many times her heart beats per minute. What is Janee’s heart rate per minute?
A. 48 beats per minute  
B. 8 beats per minute  
C. 60 beats per minute  
D. 80 beats per minute
Issues......#2

7-step protocol developed

Documented nutrition ed’s impact on standards & academic perform.

Marketing brochure for teachers

Shilts et al. JNEB 2009
What’s best?

**Options.** Given variation in schools, school board control & students, offer options.

**Costs.** Given the costs of hiring a specialist teacher for stand-alone classes in each school, recommend integrated options.
What’s best?

**Marketing.** Gather educator support by collecting further evidence of nutrition ed’s impact on ed standards, esp. for math, English for elem grades.

**Sustainability.** Use an existing structure, e.g. Cooperative Extension, to support integrated approach.
Ed Content Standards / Academic Performance


Nutrition impacts
