Expected outcome 1: competence in digestion, absorption, and metabolism
Students will demonstrate competence in digestion, absorption, and metabolism of carbohydrates, lipids, and proteins.

Assessment Method 1: Exams

Assessment Method Description
Evaluation of the performance of 10 NSPM students on 4 exams in NTRI 4820 in Spring 2013. Questions from 3 hour exams in NTRI 4820 are used for this assessment. Each of the questions were identified as relating to the following topics:
Carbohydrate digestion
Carbohydrate absorption
Carbohydrate metabolism
Lipid digestion
Lipid absorption
Lipid metabolism
Protein digestion
Protein absorption
Protein metabolism
All questions were formulated as multiple-choice, fill-in-the-blank, and short answer.

Findings
A total of 10 students were assessed during the Spring semester 2013. Question distribution for the various topics are as follows: 13 questions for carbohydrate digestion, 12 questions for carbohydrate absorption, 25 questions for carbohydrate metabolism, 9 questions for lipid digestion, 8 questions for lipid absorption, 28 questions for lipid metabolism, 7 questions for protein digestion, 5 questions for protein absorption and 23 questions for protein metabolism.
The % correct question distribution is shown in Table 1. Analysis of Table 1 indicates that students tended to perform well (with correct response percentages ranging from 88.8% to 95%) on digestion of carbohydrates, lipids and proteins. They also scored relatively well (with correct response percentage ranging from 78.3% to 90.4%) on absorption of carbohydrates, lipids and proteins. The weakness aspect of the students’ performance was in the area of metabolism for all of the macronutrients analyzed. Correct response percentage ranged from 60.3% to 76.7%. The lipid component was the weakest score at 60.3%. In terms of overall correct response percentage for the macronutrients combining all subject matter (digestion, absorption, and metabolism), the students’ performance was weakest for the lipids component (correct response percentage = 77.9%).

Table 1 – NSPM Student Performance on Questions for Course Components

| Support Knowledge: Digestion, Absorption, and Metabolism (NTRI 4820 Macronutrients) |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|
| N = 10 students                 | Digestion (%) correct | Absorption (%) correct | Metabolism (%) correct | MEAN            |
| Proteins                       | 91.5%            | 90.4%            | 75.8%            | 85.9%           |
| Carbohydrates                  | 88.8%            | 88%              | 76.7%            | 84.5%           |
| Lipids                         | 95%              | 78.3%            | 60.3%            | 77.9%           |
| MEAN                           | 91.8%            | 85.6%            | 70.9%            |                 |

How did you use findings for improvement?
Based on the assessment outcome provided above, we have found that the NSPM students scored the lowest on metabolism based questions overall, and had particular trouble with the subject matter dealing with lipid metabolism. For next year’s course, we will implement learning activities in the form of case studies will be developed that will focus on metabolism of the macronutrients to address specific aspects of this learning outcome. These case studies will be designed to enhance the comprehension of applied aspects of metabolism within this course. Since a majority of the
metabolism questions on the exams require integration of the students’ knowledge of metabolism, these assignments will enhance the overall learning environment for the students. Specific rubrics will be designed to objectively grade and assess these learning outcomes. In addition, we will continue to address learning outcomes via exams as described above. We will also implement assessment of the course that these students take prior to NTRI 4820, BCHE 3180 (Nutritional Biochemistry). This course deals with similar metabolism topics. It will be beneficial to address assessment of metabolism in this course to see students are performing low in this area in this course.

Additional Comments

Expected outcome 2: Effective professional written communication
Students will be able to write clear, grammatically correct, scientific/technical documents.

Assessment Method 1: Class writing assignment

Assessment Method Description
For the writing assignment, students in NTRI 5820 (Nutrition in the Life Cycle) write four one-page abstracts from original research articles covering selective ages within the lifecycle. These ages included Pregnancy/Lactation, Infant/Childhood Nutrition, Adolescent Nutrition, and Adult/Geriatric Nutrition. The style of writing assignment would be classified as Technical/Scientific Writing. The purpose of the assignment was to provide students with an opportunity to read the scientific literature, analyze the objectives, methods, results, and conclusions of primary research articles, and effectively communicate the pertinent information of other (peers and instructor) in a formally written form. Each abstract was worth 25 points, for a total of 100 points.

Findings
A total of 14 NSPM students were enrolled in NTRI 5820. The average total number of points for these students was 98.8. The range was 94-100. Primary strengths for this assignment were
following rules for the writing, inclusion of all required topics, and clear and concise writing. Weaknesses that were noted in assignments were not choosing a primary research article, failure to define hypothesis of the study, and results section not matching up with the methods section.

**How did you use findings for improvement?**
The relative strength of assignment was that students had the opportunity to read the literature in the area of Life Cycle Nutrition and formally write up what the research article was about. The abstracts were initially read and commented on by a peer in the class. The author was then allowed to take these peer comments and revise the abstract, before it was turned in to me. This not only allowed the peer to read the abstract and to be exposed to the findings of that particular research article; it also helped the students to be aware of and to participate the writing process as an editor. The instructor gave the students feedback on the abstract, but they didn’t have an opportunity the rewrite the abstract, once it was graded by the instructor.

A relative weakness of the assignment is that it was generally not graded from an English composition standpoint but from a content point of view. This could reflect the high scores for each assignment as well as the fact that the abstracts were peer-reviewed and revised prior to instructor evaluation.

We have determined that there is a need for specific rubrics that will help with objectively evaluating both the grammar and content of these assignments. Rubrics will be developed for this purpose by Fall 2014. Peer review will remain in place for the assignments.

**Additional Comments**
Expected outcome 3: Acceptance to professional or graduate school

Students graduating from the NSPM curriculum will be competitive in being accepted into professional or graduate school.

Assessment Method 1: Survey

Assessment Method Description
A survey was sent out to recent (2012-2013) NSPM graduates (n=13). Graduates were surveyed from April 15, 2013 - May 10, 2013. This survey was designed to provide feedback on current number of graduates accepted into professional and graduate schools. It is expected that 40% of NSPM students that apply to professional or graduate schools will be accepted.

Findings
Of the 13 recent NSPM students surveyed, 5 responses were received. 2 students were accepted into graduate school (40%). No students were accepted into professional schools. 2 of the 5 surveys indicated that they were in the process of applying to physical therapy school.

How did you use findings for improvement?
The limited responses to our survey indicate that we are meeting our goal of acceptance into professional/graduate school; however, the sample size is low and therefore we are not getting a complete assessment of our program in this area based on the first year assessment survey. Our focus is going to be to better track these students and determine not only acceptance into professional and graduate schools but also better track how many students apply to these post-graduate degree programs. This will provide us a more accurate assessment as to how our NSPM program is preparing our students for being competitive for this process. We will continue to track in concurrent years to determine if students are successful in future application submissions. In addition, we plan on obtaining specific scores on professional school exams (MCAT) and the GRE to provide a more objective method to assess scientific literacy of our program.

Additional Comments