Capacity development in food composition through distance learning and formal education

U. Ruth Charrondiere, Barbara Burlingame, Sally Berman, Heinz Freisling, Ibrahim Elmadfa

Outline

• Introduction
• Food composition Study Guide
  – General information
  – Use in food composition courses
  – Use in university curricula
• Conclusion

Shift in learning

Face to Face (teacher-driven)
On Food composition
• 550 professionals trained in courses since 1992
• limited coverage in formal training

Distance Education
(student-driven)
- Increasingly used in formal training (e.g. universities) and on-the-job training
- does not exist yet for food composition
- only means for many to obtain knowledge

Food Composition Study Guide
developed by FAO/INFOODS

Objectives

• To reach a wider audience cost-effectively, which otherwise would never be served
• To assist learners to fill their specific knowledge gaps and assess their knowledge acquisition
• To assist learners to perform better when generating, managing or using food composition data
• To assist teachers to prepare lessons and test students

Target Population

• self-learners, FoodComp courses, universities: compilers and users and also analysts; teachers and students

Development of the Food Composition Study Guide

Needs assessment

• Learning principles
• Instructional design
• Instructional principles
• Greenfield & Southgate, 2003
• many other documents (INFOODS, EuroFIR, Codex, ...)

Design

Development of modules

Peer review

Pilot testing

Testing

Publication

17 modules

<table>
<thead>
<tr>
<th>Module</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Basic principles of a food composition programme</td>
</tr>
<tr>
<td>2</td>
<td>Use of food composition data</td>
</tr>
<tr>
<td>3</td>
<td>Selection and nomenclature of foods in food composition databases</td>
</tr>
<tr>
<td>4</td>
<td>Components in food composition databases</td>
</tr>
<tr>
<td>4a</td>
<td>Component selection</td>
</tr>
<tr>
<td>4b</td>
<td>Component nomenclature</td>
</tr>
<tr>
<td>4c</td>
<td>Component conversions and units</td>
</tr>
<tr>
<td>4d</td>
<td>Methods of analyzing components</td>
</tr>
<tr>
<td>5</td>
<td>Sampling</td>
</tr>
<tr>
<td>6</td>
<td>Quality aspects of analytical data</td>
</tr>
<tr>
<td>7</td>
<td>Resources concerning food composition and publishing food composition information</td>
</tr>
<tr>
<td>8</td>
<td>Calculation of missing data and recipes</td>
</tr>
<tr>
<td>9</td>
<td>Database management systems, metadata and data interchange</td>
</tr>
<tr>
<td>10</td>
<td>Compilation and documentation</td>
</tr>
<tr>
<td>10a</td>
<td>Additional exercises in comparing and compiling data from other food composition databases</td>
</tr>
<tr>
<td>10b</td>
<td>Additional exercises in translating food intake to nutrient intake</td>
</tr>
<tr>
<td>11</td>
<td>Quality considerations in data compilation</td>
</tr>
<tr>
<td>12</td>
<td>Interactions</td>
</tr>
</tbody>
</table>
17 modules
Cover all areas of food composition and include biodiversity
Structure of each module:
(1) Learning objectives
(2) Required reading, exercise material, resources, relevance for compilers/professional users or analysts, estimated time
(3) Questions (mostly closed questions)
(4) Exercises
(5) Answers to questions
(6) Expected answers to the exercises
(7) General feedback using self rating

Example of a question (1)
IVc.Q6 Is it advisable to copy energy values from one food composition data source to another? Select the correct response. (1 point)
Answer: No, because all food composition databases use the same energy conversion factors.

Example of an exercise (1)
ILE1 Match the foods from the sample survey below with the foods found in the food composition table, also given below. In some cases, several foods from the food composition table can be matched to a single food in the survey, e.g. tea with milk and sugar = 1 + 2 + 3. (10 points: 1 point for each correct response)

Example of a question (2)
ILQF Food groups are defined differently in different countries and regions. Name nine generally accepted or widely-used food groups. (4.5 points – ½ point for each correct response)
Answer (see pp. 36-39):
- Beverages
- Fat and oils
- Meat and their products
- Milk and their products
- Fish and their products
- Eggs and their products
- Sugar, sweets and syrup
- Fruits and their products
- Vegetables and their products
- Grains and flours; Breads; Pasta; Prepared foods; Tortillas; Sweet biscuits; Savoury biscuits; Cakes; Doughs; Crispbread; Brown rice; White rice

Example of an exercise (2)
ILE1 Food groups are defined differently in different countries and regions. Name nine generally accepted or widely-used food groups. (4.5 points – ½ point for each correct response)

Questions and exercises according to Bloom’s taxonomy of cognitive objectives
1. Knowledge
   - Define
   - Match
   - List
2. Comprehension
   - True/false
   - Describe
   - Explain
   - Indicate
3. Application
   - Select/choose
   - Apply formula, criteria or instructions
   - Internet search: find
   - Match concepts
   - Interpret
4. Analysis
   - Categorize
   - Calculate
   - Compare
5. Synthesis
   - Prioritize
   - Organize
   - Arrange
   - Improve
   - Collect
   - Construct
   - Propose
6. Evaluation
   - Rate
Dissemination

- 2 volumes: Questions and exercises, and Answers
- Published in English (French and Spanish to follow in 2010)
  - as printed workbooks
  - CD

Compilation tool developed

A Compilation tool needed to be developed to allow learners to exercise and understand:
- Component identification
- Recipe calculation
- Documentation
- Compilation

- in Excel, as more learners know Excel than sql or Access

- At http://www.fao.org/infoods/software_en.stm

Use in food composition courses

- Bratislava in 2008: Module 12
- Iran in 2008: Modules 1-4c, 5
- Benin and Ghana in 2009: all modules

- different applications:
  - used in courses: participants completed during the course
  - certain modules as prerequisites before the course
  - as basis to prepare lectures
  - as basis for test

Feedback on modules

- backbone of course
- allowed reinforcement of lectures and gave new knowledge
- learned a lot
- facilitated understanding and immediate application of the new knowledge
- gives in-depth understanding of the course
- offered practical hands-on exercises
- great to assess own understanding
- created discussions through which participants better understood the issues

Use in University of Vienna (1)

Seminar on ‘Correct Use of food composition data’ in 2008 together with Heinz Freising as part of curricula in nutrition
- three days course (food and component nomenclature, compilation, recipe calculation, quality considerations)
- 15 participants (doctorate, diploma, master)
- all lectures were followed by practical exercises
  - selection of components
  - match foods from Austrian FFQ questionnaire to OELS foods
  - define tagnames of OELS
  - compile data into Compilation tool
- used modules 4a-4c of the Study Guide as homework and some exercises during course

Use in University of Vienna (2)

- between initial and final test, students improved significantly (by 2.8 marks out of 5)
- they learned a lot through modules and other applications (FFQ, OELS, compilation)
- students appreciated course even though it was very intense

- Food composition courses in universities are cost-effective knowledge transfer to future professionals
- If based on Study Guide
  - standardized content
  - good basis to prepare lectures and tests
Survey in universities on nutrition in Europe in 2009

Number of universities
• contacted: 215
• replied: 34 (16%)
• food composition in curricula at various degrees: 25
• interested in using Study Guide in curricula: 15 yes and 9 perhaps

Future applications
As distance learning package
• in universities (Europe, Australia, Africa, etc) 2009-2010
• as an e-food composition course – with or without facilitator
• with self-learning professionals already working in food composition area or intending to do so

In classroom
• in conjunction with food composition courses
• in universities

Conclusion
• Reaching a wide audience cost-effectively in 3 languages (English, French and Spanish)
• Students can choose modules of interest, time, place and repeat if necessary
• Comprehensive and standardized content
• Various applications (self-learners, universities, FoodComp courses)
• Excellent feedback from users, especially on deepening understanding, application of knowledge, and gain of self-confidence
• And first tool to allow universities to teach food composition easily, comprehensively and in a standardized way

Acknowledgement (1)
Course preparation
• inputs from Marie Luccioni, Edouard Oddo, Enrica Biondi, Prapasri Puwastien
Cover
• Oman Bolbol
Testing
• Natasha Danster, Renee Sobolewski, Nino dePablo, T. Longvah, Rekia Belahsen, Beatrice Mouille, Annalisa Sivieri, participants of courses in Bratislava, Iran, Vienna, Benin, Ghana.
Foreword
• Nevin Scrimshaw

Acknowledgement (2)
Peer reviewers

Try it out and distribute widely:
Subscribe to INFOODS listserv mail list to get more information