Software and data carpentry as a teaching model for epidemiology and data analysis in public health

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Epidemiology & Evidence Based health are “boots on the ground” & we need tools to teach them: this is a quest for such a tool
CDC’s EIS uses Boots on the Ground as their logo.
How might we teach evidence appraisal in a classroom setting?
We used a module on GRADE in the course using principles of Software Carpentry to teach evidence appraisal.

HLTH301S2: Evidence in Health Care

This is an undergraduate course on Evidence Based Health. This course is offered in the second semester at stage III of the undergraduate Bachelor of Health Sciences (B HealSc) programme. The course coordinator is Dr Arindam Basu.

- Please visit the course information link on the side bar to learn more about the sessions, and download a copy of the course outline.
- Please visit the Assessments link on the side bar to learn about Assessments in this course and submit assignments.
- The current week’s class schedule and reading lists will be updated every Sunday.
- For details of every module, please select the Relevant Topic on the sidebar.

For more information or questions, please contact Dr Arindam Basu (email: arindam.basu@canterbury.ac.nz), or call his office phone number: +64 03 369 3905.
GRADE guidelines: 1. Introduction—GRADE evidence profiles and summary of findings tables

Gordon Guyatt\textsuperscript{a,b,*}, Andrew D. Oxman\textsuperscript{c}, Elie A. Akl\textsuperscript{m}, Regina Kunz\textsuperscript{d}, Gunn Vist\textsuperscript{c}, Jan Brozek\textsuperscript{a},

\textit{G. Guyatt et al. / Journal of Clinical Epidemiology 64 (2011) 383–394}
Start with a Question

PICO format

Search Databases

Identify and select studies

Write Assignment

EP and SoF

Enter into GRADEPRO

Extract Information
GRADE's software for Summary of Findings tables, Health Technology Assessment and Guidelines
**Should breast feeding vs. formula feeding be used for cognitive development?**

**Breast feeding compared to formula feeding for cognitive development**

<table>
<thead>
<tr>
<th>Study design</th>
<th>Risk of bias</th>
<th>Inconsistency</th>
<th>Indirectness</th>
<th>Imprecision</th>
<th>Other considerations</th>
<th>No. of patients</th>
<th>Summary of findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 observational studies</td>
<td>not serious</td>
<td>not serious</td>
<td>not serious</td>
<td>not serious</td>
<td>publication bias strongly suspected all plausible residual confounding would reduce the demonstrated effect</td>
<td>Breast feeding: -</td>
<td>0 (0 to 0)</td>
</tr>
<tr>
<td>Formula feeding:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Add outcome** **Import outcome(s)**
Regular classroom teaching Evidence Appraisal using GRADEPRO
I hear and I forget.  
I see and I remember.  
I do and I understand.  
- Confucius~500 B.C.
A lot of time was spent repeated teaching one on one to students on how to work with GRADEPRO.

Despite long hours spent on one-on-one teaching, the student satisfaction was low, anxiety levels were high, the student grades were not great.
Software Carpentry: lessons learned [version 2; referees: 3 approved]

Greg Wilson
Software Carpentry Foundation, Austin, TX, USA
Live coding
How did I apply these in the classroom where I taught evidence appraisal using GRADE using Software Carpentry?
Before

Teacher

After

Teacher
What was the result?
I spent less time one on one coaching and the students were more satisfied; based on informal feedbacks. The grades were better this time round compared with previous years.
I found that it is possible to use software carpentry in a setting where you can teach evidence appraisal.
• For more details see http://bit.ly/auckland_meeting

• Photo credits: Pexel and Pixabay, all images are copylefted

• For the paper by Greg Wilson, see https://f1000research.com/articles/3-62/v2

• Software carpentry website lives here: https://software-carpentry.org/

• To learn more about my course, email me.