# Learning resource for MAPS

This guide is aimed at anyone looking to develop participatory teaching/training in food systems thinking to improve dietary micronutrients, using the MAPS tool as part of the learning activity.

We provide examples used in university teaching, or professional training, during the MAPS project. These are intended as examples which we recommend are adapted to suit local learning needs in any setting where the MAPS tool is relevant. We provide examples from undergraduate, postgraduate and professional level training provided in the MAPS project. This is intended to help guide use of MAPS in similar settings elsewhere.

We also summarise our training resources for the R language, in which our “offline” modelling development has taken place.

The MAPS tool has been developed to meet the previously unmet needs of users for an “easy to use” system that does not require extensive training; we see this as an advantage in an educational setting as well, because it should maximise the time in which learners can focus on their understanding and interpretation of the data presented.

The MAPS tool user guide [link] provides support for the features and functionality within the tool.

## Using the MAPS tool in undergraduate teaching

The MAPS tool provides an opportunity to allow undergraduate students to develop their understanding of nutritious food systems, using example micronutrients. The example provided here has been used since <year> in the School of Biosciences at the University of Nottingham. It is designed for a course which includes first year undergraduates drawn from across agriculture, agricultural economics, nutrition and dietetics degree schemes. The module ran for a full academic year each year, with the assessment component developed in the second half of the year alongside continuing scientific lectures.

We recommend adapting the approach described here to suit the learning subject focus and educational stage of the cohort for whom the training will apply.

### Intended learning outcomes

<insert>

### Context

This exercise was used as the basis for a teamwork assessed exercise for first year students. The groups were drawn together with members from the different agriculture-nutrition degree schemes in the School of Biosciences, generally with 4-6 members.

In addition to their scientific understanding, this assessment included both teaching support and assessment criteria around team-working and presentation skills, which are not included here.

### Setting the group exercise

Each group is presented with a unique nutrient – country combination available in the MAPS tool. This information was shared with students before the first in-person practical session.

* We use only countries with national-scale data. This balances having sufficient information for the learning objectives, whilst keeping the volume of data manageable for the course requirements.
* We prioritise nutrients with both large-scale food fortification and biofortification strategies that are reasonably well documented, as well as a dietary change option, in order to provide an equal academic opportunity to all the groups.

In undertaking this group exercise, students were encouraged to draw upon their own degree experience complementary to their team colleagues. This was in addition to the commonly taken taught (lecture) component of this course in “sustainable agriculture, food and nutrition”. The assessment took place in the regular university exam period after all taught components of the course were complete.

### Classroom teaching of the MAPS tool

A computer lab was used to train the approximately 90 students in each cohort, either concurrently or asynchronously depending on room availability. The MAPS tool was designed to work efficiently on low-bandwidth systems, with the added bonus that performance was not compromised during the first hands-on session when all 90 students individually connected.

The MAPS practical teaching was structured in two-hour blocks of contact time, as follows:

Session 1: Background to the MAPS tool (lecture), with additional practical examples of biofortification and large scale fortification. Follow-along use of the MAPS tool (participatory), walking through examples in QuickMAPS and how to navigate and change selected country-nutrient options.

Session 2: Reinforcement participatory training using the MAPS tool “QuickMAPS” baseline and projection data. This was student led, with groups working in their assignment teams. The examples which they tackled were different to any of the country-nutrient combinations preset as an assessment. This provided opportunities to: work as a team; contribute to answering the classroom questions; asking academic staff for any clarifications; and, developing their food systems thinking for the countries they were looking at.

Session 3: Learning how to use other online tools to support interpretation and realistic interventions to avert micronutrient deficiencies. Starting with examples in MAPS and then drawing information from supporting information. For instance:

Navigate to explore data for <country> and <nutrient> in MAPS in QuickMAPS Baseline pages:

Is there deficiency at the national level?

What differences might be experienced by populations within the country that are masked by the national-scale data?

What might be the cause(s) of these differences?

Which foods are the primary source of this nutrient in this country?

Are these foods all nutrient-dense for that nutrient (a “good source” of the nutrient), or is it because they are eaten in large quantities?

Navigate to QuickMAPS projections for the same country and nutrient:

Locate the main graph and discover the text explaining Shared Socioeconomic Pathways (SSP).

What is the expected trajectory for this country-nutrient through time?

Does this vary by SSP?

Will the nutrient deficiency vastly improve, or resolve, through time with no additional interventions? Will there be any differences likely to be experienced within the country population (as in ‘Baseline’ discussion point)

Discuss what interventions may be appropriate in this food system and why using an example from large-scale food fortification and one from biofortification.

## Using the MAPS tool in postgraduate teaching

This section is still under construction.

## Professional training using the MAPS tool

# R language training

## R language generic beginners training

This section is still under construction.

## R language for food composition data

This section is still under construction.

## R language for household consumption and expenditure survey data for nutrition

This section is still under construction.