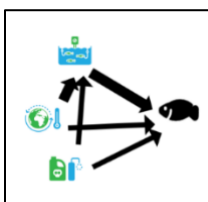
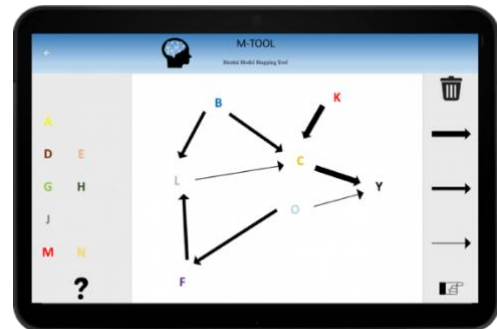


## HEIDELBERG UNIVERSITY RESEARCHERS DEVELOP FIRST TOOL TO MEASURE PERCEPTIONS OF COMPLEX SYSTEMS AMONG LESS LITERATE POPULATIONS

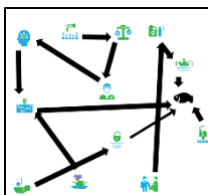
A new app, called [M-Tool](#), has been developed by researchers at Heidelberg University and Tanzanian Fisheries Research Institute (TAFIRI) as part of the MultiTip project. M-Tool is an innovative app that allows users to capture people's perceptions of complex systems (or mental models) with mobile devices and can be tailored to map perceptions of any system or phenomenon. For example, one can draw the processes that cause climate change, influence the fluctuation of (fish) stock, or the functioning of an economy. Respondents create visual diagrams of a particular system by organizing relevant factors and linking them. This is the first standardised tool that is accessible to less literate populations, as it does not require the respondent to write or read. Furthermore, the standardised set-up of the tool means you can directly compare groups of respondents. The app can now be downloaded for free in app stores.

### Mental models

M-Tool is the Mental Model Mapping Tool, a software designed to capture mental models, which are internal representations that describe an external environment. The external environment can be any type of system that consists of factors and causal links between those factors. M-Tool allows respondents to create models of a system by organizing relevant factors and linking them.



For example, the tool can capture a fisher's mental models of an ecosystem, a policymakers' mental models of their regions' economy, or children's mental models of the climate.



The examples on the left illustrate mental models of the drivers of the changes of the Nile perch stock in Lake Victoria. The first example shows how this fisher believes that the strongest influence on the fish stock is fishing in breeding grounds (thick arrow), which is influenced by climate change, which in turn also has a direct influence on the Nile perch stock, as well as the use of illegal gear. The second example illustrates a more complex mental model captured with M-Tool.

### M-Tool's innovative features

In contrast to previous mental model elicitation methods, M-Tool has innovative features which:

- A standardized tool – for comparing mental models
- Suitable for large sample sizes
- Does not require respondents' literacy
- No internet connection required during sampling
- Can be tailored to map perceptions of any system or phenomenon



M-Tool has been scientifically tested in two studies with Tanzanian fishers (van den Broek, Luomba, van den Broek & Fischer, forthcoming). These studies demonstrated that M-TOOL produces (1) **valid mental models**, adequately capturing stakeholders' mental models; (2) **fuller mental models** compared to straining interview techniques; (3) captures **meaningful differences in mental models** between different stakeholders; and (4) demonstrated M-Tool's **usability in the field**, and with **less literate populations**.

#### You can use M-Tool to:

- **Compare mental models** between groups of respondents (e.g. different types of stakeholders, expert vs the general public, across cultures, communities from different geographical areas, comparing children's mental models)
- **Assess changes in mental models over time**, to investigate the stability of mental models or the impact of an intervention on the respondents' mental model.
- **To start a conversation** between stakeholders on the functioning of a system and how to address challenges within the system.
- **Compare perceptions with the real state** of a system.
- Investigate the relation between (differences in) **individual mental models and collective mental models** composed in a group.

#### Adapting M-Tool to your needs

M-Tool can be tailored to measure perceptions of any system, as it allows the user to upload factors that are relevant depending on the context. These factors can be generated through short interviews with the target group. Alternatively, the user may be interested to see if the target group would make certain connections based on an existing set of factors. These factors may be informed by pre-existing knowledge of a system. The App features also allow users to replace and customize the audio instructions and videos with their files according to their needs and have the option to translate it to the appropriate language.

M-Tool can be downloaded for free in the [iOS app store](https://www.m-tool.org/) as well as [Google Play stores](https://www.m-tool.org/) now. For more information, visit: <https://www.m-tool.org/>