

Why having interactive activities and which ones?

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You are going to fly to a distant country: this is “expensive”, in terms of **money, time and carbon footprint**. Why would you do the same activities that you could easily do remotely? Indeed, lecturing is often a one-directional activity and, even if it is less good/practical to do it online than face-to-face, it is possible to carry the same kind of information.

Of course, you may argue that there is less chance for students to ask questions, but honestly: how many do in a normal CIMPA school or even in your own classes at home? How fast can a student digest the material you are offering (among many other courses during the same weeks!) and come with question she/he won't be ashamed to ask? Do you think that your own students could do it?

This is why, we suggest you use the face-to-face time to do activities which are not so easy to program online because they involve more exchanges with the participants. This will also have other benefits, among which

- **Breaking the isolation** of some students that would have stayed alone during the whole school;
- Working on their **soft skills** (collaboration is important, even in mathematics!)
- Knowing who are the **talented students** within the participants so one can offer them other opportunities (mentoring, fellowships programs...).

But maybe, the main advantage is that it is **more fun for everyone** than a classical lecture: be active, learn to know other people and share experiences! Here are some examples of what can be done, but I'm sure you find your own way.

Examples:

- 1) Several small groups working on a « research topic » under the supervision of one or several instructors. For an example look at <https://www.dpmms.cam.ac.uk/~hk439/wine3groups.html>
The topic may be a truly open question, or a variation around a case done in a paper or even a long and interesting homework. Participants are divided in groups before the School and some literature is sent to them in advance. At the beginning of the School, some short courses may be taught to the group and some research is done together. At the end of the School, talks are given by the groups in front of all participants to present the topic and what has been achieved. Depending on the level, the amount of material that one can find online, this format can include some lectures for everyone during the first week. After the School, a successful work may be continued online, lead to a publication or a PhD thesis.
- 2) Variation of this format <https://arxiv.org/abs/1612.03539v1>
- 3) Flipped classes: the instructors send pdf of course(s) (or links to videos of lectures) to the students and distributes the sections/chapters between them (possibly as small groups). During the first week of the school (and before if necessary), the instructor

can answer questions, gives some exercises to check that the content is mastered and helps preparing talks that will be given during the second week by the students: they will present their part of the course to all participants.

Note that these formats have their specificities: organizational (you may have to provide the necessary background beforehand using digital technology for instance, look at [our platform](#) to do so), material (for instance the necessity to have several classrooms) but also mathematical (the level of what can be expected may be lower than what a lecturer could do alone). However, the pedagogical benefits of such formats largely compensate the organization constraints.