



# Best Practice Guide: In-Person and Online Training Courses

(Key Ideas from the CASTIEL Sharing Circle: Best Practices for In-Person and Online Courses, 4 February 2022)



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## Introduction

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- The pandemic forced the institutions in charge of developing educational courses to move the course format from face-to-face to remote learning. This was a new way of teaching which needed to be formalised, however there was a lack of guidelines on how to improve and maximize the benefits of the online format without losing the effectiveness of in-class training.
- This document provides tips and main concepts for the in-person and online courses.

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## In-Person Courses: Main Concepts

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### PRE-COVID COURSES – IN-PERSON COURSES ADVANTAGES

- There was a range of delivery mechanisms, but the in-person format was the most commonly used.
- The atmosphere in some courses was more informal and relaxed.
- Theoretical lessons could be enriched with practical parts and demo sessions more easily.
- It was easier to have immediate feedback from participants.
- Participants felt more engaged.
- More interactions were possible among participants and between the trainer and participants.
- It was easier for participants to interact during breaks, find new collaborations, learn more about the other participants.
- Attendance was easy to track and reported allowing the delivery of the certificate for all the qualified participants.

### IN-PERSON COURSES DISADVANTAGES

- More preparatory effort was required from the trainer, also more effort in the courses was needed.
- More effort and time was needed for travel and course organization.
- It was harder for people from other countries to join the in-person course due to travel costs, time and other factors.
- The courses were organised over several days and were packed with a lot of information to use the available time to the maximum.

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## In-Person Courses: Suggestions for Better Delivery

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- It is better to choose venues easily reachable by participants and easily connected by the public transport.
- Classrooms are often in the buildings of the training institutions but they can also be rented respecting the budget constraints.
- Students often prefer to use their laptop, however, computers must be available if needed. A stable internet connection is required during the course.
- Spacious rooms are recommended with light and windows to exchange the air easily.
- A good sound amplification is required to allow comfortable speaking for the teachers and listening for the students.
- Visual equipment (e.g., large blackboard, flipchart, large screen) is recommended to allow students better and comfortable reading of teacher's explanations.
- Enough breaks are needed, consider a separate room for relaxation and refreshments.
- It is recommended to have facilities for lunch near the course venue allowing lunch options for all dietary needs.

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## Online Courses: Main Concepts

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### COVID: ONLINE SYNCHRONOUS DELIVERY

- **Synchronous Delivery Advantages:**
  - Usually split over several days or weeks.
  - There is more time for attendees to assimilate info or review material.
  - There is more time for attendees to attempt practical exercises in between sessions.
  - Much more relaxed, with less burnout for all concerned.
  - They allow some interaction between participants and trainers, e.g., quizzes and polls.
  - Excludes costs for traveling and accommodations.
  - More geographically inclusive, cost less and are easier and faster to organize.
- **Synchronous Delivery Disadvantages:**
  - It is harder to provide practical support with exercises or hands-on (online chat boards help).
  - It is harder getting feedback from participants and maintaining their attention.
  - Attendees may not be available for every session (recordings help).
  - Interaction among participants is limited.
  - A good quality internet connection is required on the side of the lecturer and the participants.
  - Learning different communication skills.
  - Challenges: Technical problems.

### COVID: ONLINE ASYNCHRONOUS DELIVERY

- **Asynchronous Delivery Advantages:**
  - It is very cost-efficient once the material is developed.
  - It can be used by many students.
  - It is very accessible for people far apart from each other.
  - Easy way to connect in a comfortable environment.
  - Excludes costs for traveling and accommodations.
  - Recordings are available for future reviews.
- **Asynchronous Delivery Disadvantages:**
  - The course development requires a lot of time, resources and money.
  - It is difficult to maintain the course (recordings are hard to edit).
  - There is limited interaction between attendees and staff. No interactions among students.
  - No support with exercises or hands-on.

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## Online Courses – Key Ideas

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- During pandemic, only online courses were possible. Online teaching can be more challenging for both trainers and learners. However, the majority of learners may now prefer online courses over in-person ones (online courses are easier to organise, cheaper and participants got used to connecting from anywhere).

### ONLINE TRAINING PLATFORMS

- Zoom - breakout sessions are useful for exercises, oral presentation and chat sessions (6-8 people per room).
- Webex.
- GoToMeeting.
- MicrosoftTeams.

- HackMD is useful to share collaborative HackMD documents.
- Google Colab.
- Gather.

## TIPS FOR TRAINERS

- Start by defining your target audience by answering questions like:
  - What is the expected educational level of my audience?
  - Have they already been exposed to the technologies I plan to teach?
  - What tools do they already use?
  - What are the main issues they are currently experiencing?
- Create learner personas and try to think of what is useful to them – intended learning outcomes.
- All instructions need to be extra clear, particularly for exercises.
- The online teaching pace needs to be slower.
- Try to keep a conversational environment.
- Good materials and good trainers are even more important in online courses than in live ones:
  - The trainer must be engaged, open, and enthusiastic.
  - Don't worry about informality and reacting to the situation.
- Exercises are the backbone and should be given plenty of time.
- It is better to have more than one trainer working on a teaching event – an assistant taking care of chat, solving technical issues, etc.
- Use an extra laptop to visit multiple breakout rooms.
- Technology makes a big difference: use more than one platform (Zoom+HackMD+Sphinx is a great combo).
- There is a need to avoid cognitive overload and fatigue.
- Some participants are shy in an online environment – find ways how to interact with all participants.
- Focus on spreading the content to more days in the mornings or afternoons, e.g., max 3 consecutive days with shorter sessions.
- Publish all lessons open source and encourage reuse.
- Plan/Revise the training by exploring feedback received from the audience, surveys are very important.
- Create a sequence of exercises (formative assessment) that test incrementally progressing tasks and acquisition of new skills.
- Write material to teach the gap between exercises.
- Keep an eye on the chat, broadcast questions to everyone.
- Individual practicing, coaching, feedback from professional communications trainer, colleagues, and participants can be useful.
- Be aware that some students may cheat during online exams.
- Advantages of using HackMD over a chat platform:
  - All information in one place
  - Better overview of questions/answers, nothing gets lost
  - Persists after the workshop
  - Ties the whole workshop together!

## HOW TO KEEP PARTICIPANTS' ATTENTION

- Encourage participants to keep the video on.
- Start with polls, quizzes:
  - Better than the usual self-introduction.
  - Better overview of students' backgrounds.
- Icebreaker question to get everyone started.
- Continuously ask students to guess the next steps.
- A lot of humour during the explanations helps.
- Find interactive ways to engage learners – e.g., HackMD for Q&A and breakout rooms help but are

not enough.

- Make access as easy as possible by using Jupyter notebook for hands-on.
- Live-coding or type-along preferred over lectures.
- Ask for instant feedback by using emoticons in Zoom or typing Yes/No.

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## Conclusions

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- Teaching methods matter. In-person and online courses have their advantages and disadvantages and it is necessary to evaluate each case individually when designing a course. Many students are frustrated with constantly learning online and with online exams.
- In-person courses allow interaction among people
  - Requirements are very critical
  - Can be cost demanding for organizers having to find the right classroom
  - Can be cost demanding for students having to travel and finding an accommodation
- Online course enables a wide range of delivery styles:
  - Lots of opportunities need to be discovered!
  - We need to learn how to best use our resources.
  - On the other hand, the interactions are limited.
- Hybrid events could continue post-COVID. To be aware that these events:
  - Are harder to organize.
  - Require more technical equipment.
  - Have a risk of splitting into two separate events.
  - Can easily reach more people.
  - Provide some interaction.

### LESSONS LEARNED: FROM ONLINE COURSES TO FUTURE IN-PERSON COURSES

- Do shorter lectures and switch between them and hands-on.
- Do more networking, don't take the social component for granted.
- Use technology, visual equipment.
- Hands-on exercises are preferred in-person.

## Annex - Agenda

Time	Speakers
9:30 – 9:40	Francesco Falciano (NCC Italy): Introduction
9:40 – 9:55	Hande Toffoli (NCC Turkey): <b>“Hybrid Teaching: How to Program Course with a Heavy Hands-On”</b> <ul style="list-style-type: none"> <li>• Strategies for encouraging and maintaining independent study.</li> <li>• How to organize poster and oral presentation sessions using Zoom breakout sessions.</li> <li>• Strategies for minimizing cheating.</li> <li>• Strategies for hybrid teaching.</li> </ul>
9:55 – 10:10	Kjartan Thor Wikfeldt (NCC Sweden): <b>“Embracing Online Teaching with Interactive Lesson Material and a Hands-on Workshop Format”</b> <ul style="list-style-type: none"> <li>• How to develop public and open-source training material suitable for both online training and self-learning guided by best practices in lesson development</li> <li>• How to use Zoom for online workshops, how we use breakout rooms for exercises</li> <li>• How to use HackMD to add structure to an online workshop</li> </ul>
10:10 – 10:25	David Henty (NCC UK): <b>“Structure and Timetabling of Online HPC Courses: Pros and Cons of Different Approaches to Online Courses”</b> <ul style="list-style-type: none"> <li>• With the rapid move to online training there has been a lot of discussion about technologies for delivery of lectures and practicals, but surprisingly little discussion about the high-level structure and timetabling.</li> <li>• Sharing of a variety of formats that EPCC has used including: intensive courses; full or half days but with gaps between them; recorded lectures with live practicals; fully asynchronous courses such as MOOCs.</li> </ul>
10:25 – 10:35	<i>Break</i>
10:35 – 10:50	Morris Riedel (NCC Iceland): <b>“Impacts of NCC Germany &amp; NCC Iceland Teaching Challenges &amp; Solutions”</b> <ul style="list-style-type: none"> <li>• Teaching challenges and solutions from Germany and Iceland</li> </ul>
10:50 – 11:05	Volker Weinberg (NCC Germany): <b>“Best Practices for Online Training”</b> <ul style="list-style-type: none"> <li>• Summarizing our top 10 recommendations for doing online training</li> </ul>
11:05 – 11:50	<b>Open discussion and sharing of experiences among all participants</b> <ul style="list-style-type: none"> <li>• Q&amp;A</li> <li>• Sharing of best practices for in-person and online courses from all participants</li> <li>• Open discussion</li> </ul>
11:50 – 12:00	Francesco Falciano (NCC Italy): Wrap-up, closing



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