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Education Notes bring mathematical and educational ideas forth to the CMS readership in a manner that promotes discussion of relevant topics including research, activities, issues, and noteworthy news items. Comments, suggestions, and submissions are welcome.

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Many universities have already announced their plans for the winter term: the vast majority of higher education institutions will offer courses in a remote environment in the winter 2021 term. While we may continue to lament over the numerous disadvantages of online teaching and learning, we must accept that it is our reality for at least one more term. As such, we owe it to our students and our colleagues to make the best of the situation, to be flexible and open-minded in the new environment, to learn previously unfamiliar tools and technologies, to reflect on our practice and to adjust.

Fall term is in full swing and by now we've all had our fair share of remote teaching experiences. Everyone seems to have invented their own recipe for synchronous and asynchronous pedagogy, but we can all agree on the following: synchronous online sessions are decisively not the same as synchronous face-to-face lectures and cannot be treated as such. Below we present to you a collective wisdom, compiled into 10 P's. While the suggestions are general to online teaching, we have developed these suggestions with mathematics teaching in mind.

Ten Practical Principles of Prosperous Pandemic (remote) Pedagogy

- **Plan, plan, plan...then plan some more**
Ad-hoc teaching is a no go. Go into class with a solid lesson plan and rigorous schedule for how time will be spent. For breakout rooms: provide a specific task or deliverable, preferably in advance of the class. Plan for flexibility to accommodate technical issues and life.
- **Practice**
Try out the breakout rooms, screen sharing, test the links, test your equipment, if possible test different browsers and computer systems. Make sure you are comfortable with what students will be experiencing before you put them through it.
- **Pre-record**
If you plan to talk for more than 20 minutes, consider pre-recording. This way, students can engage with the material at their own leisure. Furthermore, the synchronous delivery of important content can be interrupted by technical issues, resulting in a frustrating scenario for yourself and your students.
- **Prepare**
Your personal workspace is your classroom in the online teaching environment. Prepare and test your equipment and links you will use well before students arrive. Have a back-up plan in case of technical issues. Inform students of online classroom etiquette you want them to adhere to (mute, raise hand to speak, put questions in the chat, use headphones, etc)
- **Participate**
Get students involved: chat, screen annotation, voting questions, non-verbal feedback (reactions, thumbs up/down), breakout rooms, ... It is best practice to move content delivery to asynchronous domain.
- **Poll progress**
Check whether the students follow. You can use the poll feature built into your video conferencing software or an alternative software such as Kahoot or Socrative (both of which are free and do not require students to login).
- **Pause**
Do not talk for long, take frequent breaks to allow for questions (play Jeopardy music in the background if the silence is too much for you), tell students how they can ask (chat, voice, raise your hand)
- **Place**
Create places and spaces for the students to collaborate outside of the video call. Without physical proximity and ability to see each other's notepads, students need a space to share work and discuss it. Consider external places of collaboration, such as Padlet, Google Docs/Sheets/Jamboard, AWW.
- **Presence**

Create opportunities for students to share about themselves to build class community with their presence. Include getting-to-know-you activities, make introductions a part of each breakout room activity, ask students to upload profile pictures (not necessarily of themselves), play music while students arrive (ask for preferred genres), start class off with a brainteaser. While everything in online pedagogy tends to be intentional, it does not need to be impersonal

● **Possibilities**

With everyone connecting through a device, there are endless possibilities to not just talk (let's be honest: your face isn't that exciting). Use visuals, use graphing tools, use websites, etc. Recognize that there is potential beyond lecturing in an online learning environment.