

# Online Teaching: Q&A

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*Summary of Questions*

*I. Does Online...*

*IIa. How Can We Use...*

*IIb. How Many...*

*IIc. Synchronous...*

*IId. How Important Is...*

*Ile. How to Motivate...*

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## 1. Introduction

- During the May 27 session, many important questions were raised.
- We will try to summarize the questions and provide some answers.
- However, please do not expect full answers.
- Online-only teaching is a new territory for all of us; this is bad news and good news:
  - it's bad news because we can't use ready answers
  - it's good news because we can't use ready answers
  - so we all need to improvise, we all have a chance to make a significant contribution.
- In providing answers, we will use our experience and experience of our colleagues.

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## 2. Summary of Questions

- I. Does online teaching work at all? Are there disciplines where it does not work?
- II. How to organize online teaching:
  - a. How can we use the experience of video lectures and open university?
  - b. How many students in a group?
  - c. Synchronous vs. asynchronous?
  - d. How important is feedback?
  - e. How to motivate students and keep their attention?
  - f. How much homework to assign?
  - g. How to test and how to grade the tests?

### 3. Summary of Questions (cont-d)

#### II. How to organize online teaching (cont-d):

##### h. How to take special circumstances into account:

- \* gifted and talented students,
- \* special education students,
- \* students from disadvantaged families?

##### i. How to make it easier for students and for instructors?

##### j. How to maintain student health?

##### k. How to design an online class with limited resources in limited time

#### III. What is the future of online education?

#### IV. In view of this future, how to best prepare future teachers?

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## 4. I. Does Online Teaching Work?

- Until this Spring, there were two main opinions:
  - online learning is the revolutionary future, it will make learning much better,
  - online learning is a disaster promoted by politicians and theoreticians who never taught in real schools.
- So far, the experience is that it worked, even with improvised imperfect teaching:
  - it was not as good and spectacular as promised,
  - it was not as disastrous as opponents predicted.
- Even in disciplines like medicine and electrical engineering, a lot of teaching moved online.
- In medicine etc., some face-to-face is needed.
- Math, computer science, etc., if needed, can be all online.

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## 5. IIa. How Can We Use the Experience of Video Lectures And Open University?

- At first glance, online teaching is nothing new; e.g.:
  - video lectures have been circulating for some time, MOOCs were based on them, and
  - open universities have been successfully producing specialists in many countries.
- We can definitely use some technical idea, but there is a big difference:
  - MOOCs and open university were for enthusiastic students, and now we need to tech everybody,
  - even for enthusiastic students, for many popular MOOCs, success rate was below 10%.
- Clearly, this is inappropriate for general education.

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## 6. IIb. How Many Students in a Group

- The main limitation is the ability of the instructor to provide regular feedback to all the students.
- The usual recommendation is to have no more than 25 students in an online class.
- This is, by the way, a general recommendation for a regular school class as well, the only difference is that:
  - for normal learning, it is just a recommendation;
  - smaller classes are better for students, but larger classes are manageable too;
  - however, for online learning, larger classes become unmanageable: teachers overwork, students fail.
- If there are teaching assistants, then larger classes are also maintainable.

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## 7. IIc. Synchronous Vs. Asynchronous

- For students, synchronous is clearly better, they get feedback right away.
- For teachers, it is also better:
  - they do not need to record every detail,
  - they can be flexible – slow down or speed up depending on student feedback.
- They can ask questions and get answers right away – as in a face-to-face class.
- Unfortunately, bandwidth limitations do not allow all classes to be synchronous.

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## 8. IId. How Important Is Feedback?

- Feedback is crucial for education.
- If it was not so, there would be no need for teachers, only for graders:
  - once students learn how to read,
  - they would be able to study from the textbooks.
- A few students can do it, but most cannot.

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## 9. IIe. How to Motivate Students and Keep Their Attention?

- This is a difficult question already in a regular class.
- For this, pedagogical students usually take a special course on class management.
- Online, this is even more complicated:
  - there are many more distractions at home than in the classroom,
  - and there is no contagion effect – when interest of others keeps students more interested.
- So, we need to use more of usual class management techniques.
- In particular, we need to make our materials and our presentations even more entertaining.

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## 10. IIc. How Much Homework to Assign?

- Homeworks help students learn.
- On the other hand, if we assign too much homework:
  - students get overworked, and
  - we instructors get overworked.
- A natural idea is:
  - to decide how much time students should be spending on homework, and
  - assign accordingly.
- At the university level, the usual recommendation is 3.5 hours at home for each lecture hour.
- At the school level, the proportion is much smaller, usually less than 1.

## 11. IIf. How Much Homework to Assign (cont-d)

- What if this requires too much grading?
- One idea is not to give detailed comments in each homework, post common mistakes instead.
- Another idea is not to grade everything, to grade only randomly selected tasks.
- For example, we assign problems 1–4 but grade only problems 1 and 3.
- For math problems, we can use automatic grading systems like the one used in ALEKS.

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## 12. IIg. How to Test and How to Grade the Tests?

- A big concern is cheating, which is easier online.
- A straightforward solution is to install cameras watching students during the test.
- We can also use the usual tricks.
- The best is to have individualized questions, so that students do not copy from each other.
- For example, in math problems, we can use a student-related number as one of the inputs.
- This requires a lot of work when grading.
- Less work if we have a few different versions of the test.
- If this is too difficult, we can have test questions scrambled differently for each student.

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## 13. IIg. How to Test (cont-d)

- Emphasis should be on open-book open-notes questions, not on memorization questions.
- However, this is a usual pedagogical advice.
- How to decrease time spent on grading tests?
- We can use the same ideas as for homeworks.

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## 14. IIh. How to Take Special Circumstances Into Account

- Gifted and talented students seem to excel in this new mode – at least this is anecdotal evidence.
- The situation with special education students is much more complicated.
- There are international standards requiring all online materials to be accessible to people with disabilities.
- Most software tools have way to accommodate these standards.
- We need to learn this.
- A special problem is students from disadvantaged families.
- These students need help: loaning equipment, donating equipment, computers in public places, etc.

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## 15. III. How to Make It Easier for Students and for Instructors?

- The most important thing is to keep work-life balance.
- We can – and did – work overtime for two months.
- It is not possible to overwork for a longer time.
- We need to allocate time for teaching, and stick to it.
- Students have it easier: when they have too many assignments, they stop doing them.
- It is not being cruel to students, it is being realistic.
- Normally, no one will seriously answer all student's phone calls right away.
- Similarly, we cannot answer their emails right away.
- And maybe, while the student waits for an answer, the student will find his/her own solution.

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## 16. IIj. How to Maintain Student Health?

- This is a difficult question.
- Students need exercise, PE is a must.
- Something needs be done about vision.
- Reason: sitting in front of a computer is not good for the eyes.

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## 17. IIk. How to Design an Online Class With Limited Resources in Limited Time

- There are specialists, there are instructions and textbooks.
- However, following all these instructions is not realistic.
- In the past, at our university:
  - an instructor had to take a 2-month intensive course in online teaching,
  - then, he/she spent several months designing a class.
- We cannot afford this luxury.
- Let us just do it.
- The result will be imperfect, we will improve it as we start teaching.

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## 18. III. What Is the Future of Online Education?

- This depends on us.
- The more experience we gain, the better will be our classes, the more effective will be online teaching.
- Good news is that online teaching does not save money.
- It is good because there are no incentives for politicians to force us into more online teaching.
- We are the specialists.
- We shall decide – and we will decide – how much learning will be online.

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## 19. IV. In View of This Future, How to Best Prepare Future Teachers?

- Definitely we need more classes on online teaching.
- These classes should be required for all future teachers.
- They shall be a must for teacher's continuing education.
- However, even without these classes, students will learn – from their own experience.
- Consciously or not, we all teach largely the way we were taught.
- If we teach our students fully or partly online – as we do now – they will learn how to do it.
- And let us all hope that in the future, online learning will be used only because it is efficient!

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