Online Teaching: Q&A

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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.
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?
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.
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.
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.
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.
8. **IIId. 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.
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.
10. IIc. How Much Homework to Assign?

• Homworks 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.
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.
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.
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.
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.
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.
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.
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.
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!