

Best Practices of Teaching and Learning Online

(Based on a Recent
International Forum)

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1. Introduction

- On April 2, attended an (online) pedagogical forum devoted to the problems of online and hybrid education.
- One of the main presenters was Dr. Mourat Tchoshanov from UTEP College of Education.
- Many interesting observations and ideas were presented.
- We will try to cover the main points.
- Please take into account that this is an understandably subjective overview.
- We are sure that what we missed is also very important.
- Two main aspects were discussed:
 - how successful is online and hybrid education and
 - how do students and instructors feel about it.

2. Comment

- Interestingly, similar results can be traced to the studies of the previous distant learning techniques such as:
 - open university – where communication was by snail mail,
 - radio- and TV-based lectures, etc.
- From this viewpoint, many over-optimistic articles about online and hybrid education are over-hyped.
- Yes, computers do bring new features.
- However, computer-based distant learning is not as revolutionary as it is described in these articles.

3. Comment (cont-d)

- For example, during the current pandemic:
 - in some rural locations in India, where computer connection is not good,
 - snail mail, radio, and TV were used for distant learning,
 - with results almost as good as in other locations, where students used computers.

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4. Effectiveness: General Statistics

- Interestingly (and somewhat unexpectedly for us), statistics shows that, on average:
 - online education (OE) is somewhat more effective than face-to-face (F2F), and
 - hybrid education (HE) is drastically more effective than both pure OE and pure F2F.

5. Effectiveness by Student Level

- The relative effectiveness of OE and HE is the smallest for BSc students.
- It is especially small for freshmen and sophomores.
- This may be a purely American phenomenon; indeed, many studies are based on US students:
 - in the US, socializing is an important part of university experience, and
 - OE drastically decreases the possibility to socialize.
- The relative effectiveness of OE and HE is much higher for senior level, graduate, and doctoral students.

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6. Effectiveness Varies

- Effectiveness of OE and HE varies more wildly than effectiveness of F2F teaching.
- Many online and hybrid classes have been migrated from the F2F classes.
- Both positive and negative features get amplified after this migration.
- On the one hand:
 - F2F classes that were somewhat more effective than the average F2F class
 - become drastically more effective than average OE and HE classes.

7. Effectiveness Varies (cont-d)

- Vice versa:
 - F2F classes that were somewhat less effective than the average F2F class
 - become drastically (sometimes disastrously) less effective than average OE and HE classes.
- From this viewpoint, this migration can serve as a diagnostic tool.
- It helps better see problems with the original F2F class.

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8. What Does Not Work: Simple Migration

- What clearly does not increase effectiveness is simply moving the F2F class verbatim to the online format.
- Students get even more bored than in a F2F class when all they see is a talking head.
- After finishing their homeworks and tests, students also need to scan them.
- This is correctly perceived as useless extra work.
- So the students look forward to return to F2F.

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9. What Helps Somewhat: Bells And Whistles

- OE and HE allow the instructor to supplement the lecture with videos and elements of gamification.
- This works mostly for starting BSc students.
- For senior BSc and graduate students, this practically does not increase the teaching effectiveness.
- Many instructors spend a lot of time on this.
- However, for graduate classes, this may not be worth the efforts.

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10. What Helps a Lot: Individualization

- One of the advantages of OE and HE is that:
 - students can more easily follow their own path
 - when studying the material.
- This is, by the way, the main advantage of OE and HE education – when properly utilized, of course.
- Some individualization is automatic:
 - in a usual somewhat flipped mode, students study the material before the class, and
 - they do it at their own pace.
- However, there are other possibilities to individualize the teaching process.

11. Individualization (cont-d)

- For example:
 - in addition to the regular linearly ordered material,
 - good OE classes include a lot of additional material that the students can access if interested.
- This can be additional motivational material.
- For each topic, we can add examples of potential applications in different areas.
- For example, when studying calculus:
 - in addition to a link to usual physics examples for those who like physics,
 - we can have another link to a brief description of biological applications of calculus;
 - this will help students who do not feel comfortable with physics but like biology.

12. Individualization (cont-d)

- We can have additional material for more *advanced* students.
- This way, they do not feel so bored in class.
- Example: additional interesting aspects and applications of topics studied in class.
- We can have additional material for students who *struggle* with this class.
- Example: a more detailed description of how to solve some problems, etc.

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13. What Helps: Clear Motivations and a Clear Grading Scheme

- Of course, clear motivation and clear grading is important for F2F classes as well.
- However, for OE and HE classes, the need for clear motivation becomes critical.
- Without it, effectiveness plummets.

14. What Helps: Timely Feedback

- Students get nervous:
 - when they do not get a timely feedback,
 - when they do not feel that the instructor is always there to help.
- Somehow, in F2F classes, students get good contact and feedback during classes.
- So most students are OK with having their questions answered during twice-a-week office hours.
- In contrast, in OE classes, students start getting nervous if they do not get their answers in 24 or 48 hours.

15. Timely Feedback (cont-d)

- We need to take into account that many students – like many young people in general – stay late.
- So when they send a question at 1 am, this is where their clock starts ticking.
- The instructor may answer the next morning – less than 24 hours for his/her clock.
- However, for a student, it is already a reason to feel nervous.
- And his nervousness affects the student's success in class.

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16. What Helps: Absolute Preparedness of Each Class

- In a F2F class, it is OK to improvise based on the immediate feedback.
- Many students actually love it when sometimes, an instructor makes a minor mistake in an example.
- It shows humanness.
- It is just like a politician causes more empathy:
 - with some improvisation as opposed to
 - just delivering – like a taped recording – a pre-packaged speech.
- In OE classes, feedback from students – that allows improvisations to be successful – is very limited.
- As a result, improvisations rarely work well.

17. Preparedness of Each Class (cont-d)

- Experience shows that for a class to be effective:
 - it must be well prepared,
 - all the way to minor details.
- It is still OK to try improvisations.
- However, if it does not work well, it is good to have a well-prepared Plan B.

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18. What Helps: Perfect and Clear Organization of the Course As a Whole

- This helps students navigate the material.
- This helps the instructor teach the same course next time.
- This helps others pick up this course if needed.

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19. What Helps: Writing Everything Down

- It is good to have videos.
- Theoretically, students can watch them and learn from then.
- However, experience shows that students learn better if the videos are supplemented with some written text.
- This does not have to be a full transcript.
- However, some key points should be in writing.
- One of the reasons is that it is much easier and faster for students:
 - before the test or while working on a homework,
 - to review the main points of the written text – while skipping details,
 - than to re-watch the whole video lecture from the beginning to the end.

20. Writing Everything Down (cont-d)

- This is a big problem for some instructors.
- Many of us like to give lectures, but view writing the lecture notes as hard work.
- Yes, it does not feel like hard work at first.
- However, the experience shows that eventually:
 - instructors get accustomed to it and
 - do not feel so bad about this need.

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21. What Hurts: Micromanagement

- A lot of teaching on all levels is done in an authoritarian style, when the instructor micromanages students.
- Students feel helpless, and this hurts the effectiveness of their learning.
- This effect – well studied by Freire – is present in F2F education as well.
- However, in OE classes:
 - students feel even less opportunity to provide feedback,
 - so this negative effect can be even more drastic.

22. Micromanagement (cont-d)

- Not only it hurts the learning:
 - this feeling of helplessness can (and does) bring many students
 - into a rebel-without-a-cause non-constructive teenage rebel mode.
- Here, one needs to be very careful.
- It is definitely great and desirable when students participate in social action.
- However, experience – e.g., of the 1960s in Europe and in the US – shows that:
 - in some cases, rightful protests turn into
 - destructive violent riots with catastrophic consequences for the students and for their universities.

23. What Hurts: Zoom Fatigue

- Students can sit for 3 hours per day, for 6 hours per day at F2F lectures.
- However, they get very tired when they sit 6 hours in front of a computer.
- What can we do?
- One possibility is to make OE lectures and discussions shorter than F2F ones.
- Another is, during the class time, to ask students:
 - to switch off their cameras,
 - to do some work on sheets of paper, and then
 - to discuss their results.

24. Important: Not to Be Discouraged

- The first try of teaching an OE or HE class is, on average, not very effective.
- It is usually even less effective than the original F2F class.
- Some instructors get discouraged by this.
- However, good news is that on average, an instructor learns by trying.
- Eventually the classes become very effective.

25. But What About Attitude?

- All the above results are about effectiveness, but how about attitude?
- On average, about 80% of the instructors favor HE mode.
- This was confirmed by the impromptu survey of the forum participants.
- However, only 60% of the students favor this mode.
- All others prefer F2F mode, in spite of the HE mode's better effectiveness.

26. What About Attitude (cont-d)

- This shows that:
 - while they learn better in a HE mode,
 - they do not feel as comfortable.
- Maybe it is because of an additional feeling of helplessness.
- In any case, this definitely shows that we need to continue working on the way we teach.

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